

Vol. 23, Part 5

Nos. 544-756

# HELMINTHOLOGICAL ABSTRACTS

*incorporating*

BIBLIOGRAPHY OF HELMINTHOLOGY

COMPILED FROM WORLD LITERATURE OF 1954



*Prepared by the*

COMMONWEALTH BUREAU OF HELMINTHOLOGY

THE WHITE HOUSE, 103 ST. PETER'S STREET, ST. ALBANS, HERTS

*Published by the*

COMMONWEALTH AGRICULTURAL BUREAUX, FARNHAM ROYAL, BUCKS, ENGLAND

## COMMONWEALTH AGRICULTURAL BUREAUX

---

### EXECUTIVE COUNCIL (as at 18th December 1956)

#### Member:

C. E. Lambert, C.M.G. (*Chairman*)  
W. C. Tame  
J. G. Malloch, M.B.E., Ph.D. (*Acting Member*)  
A. Shavitsky  
V. Armstrong, Ph.D.  
E. D. Andrews  
T. Swaminathan, I.C.S.  
(*Vacant*)  
(*Vacant*)  
J. E. C. Coventry

*Representing:*  
Colonial Territories  
United Kingdom  
Canada  
Australia  
New Zealand  
Union of South Africa  
India  
Pakistan  
Ceylon  
Federation of Rhodesia & Nyasaland

Sir Herbert Howard (*Secretary*),  
Farnham House, Farnham Royal,  
near Slough, Bucks.

---

## COMMONWEALTH BUREAU OF HELMINTHOLOGY

#### Staff:

R. T. Leiper, F.R.S.  
Miss S. M. Willmott, Ph.D.  
Miss A. Walton, M.B.E.

Miss M. W. McKenzie, B.Sc.  
Miss B. Birdsey  
Miss G. I. Pozniak

---

## HELMINTHOLOGICAL ABSTRACTS *incorporating* BIBLIOGRAPHY OF HELMINTHOLOGY

Abstracts in the present number are by:

S. Bingefors  
A. E. Fountain  
Mary T. Franklin  
J. B. Goodey  
R. T. Leiper  
Mary W. McKenzie  
D. Mettrick

B. G. Peters  
Grazyna I. Pozniak  
C. Rayski  
D. L. H. Robinson  
H. R. Wallace  
Sheila M. Willmott  
L. S. Yeh

# HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1954

Vol. 23, Part 5

## 544—Acta Medica Italica di Malattie Infettive e Parassitarie.

a. MOLINARI, V., PEZZULLO, C. & RICCIARDI, R., 1954.—“Su di un caso di cisticercosi muscolare diffusa.” 9 (12), 329–333. [English, French & German summaries pp. 332–333.]

## 545—Acta Medica Scandinavica. Supplementum.

a. SIURALA, M., 1954.—“Gastric lesion in some megaloblastic anemias: with special reference to the mucosal lesion in pernicious tapeworm anemia.” 151, Suppl. 299, 47 pp.

(545a) Siurala has made a comparative study of the type and occurrence of lesions of the gastric mucosa in 58 untreated cases of pernicious tapeworm anaemia, 17 untreated and five relapsed cases of Addisonian pernicious anaemia, five possible cases of tapeworm anaemia, two cases of intestinal megaloblastic anaemia and one case with a resected stomach and megaloblastic anaemia. Gastroscopy with or without biopsy was performed on all patients. Persons infected with *Diphyllobothrium* but without anaemia were used as controls. Atrophic mucosal lesions were significantly more frequent in the cases of tapeworm anaemia. There was also in these cases a relatively good correlation between the ability to secrete hydrochloric acid and the gastric mucosal lesions. The paper is illustrated by a series of photomicrographs of sections of the lesions.

S.W.

## 546—Acta Medicinae Okayama.

a. YAMAGUTI, S., 1954.—“Studies on the helminth fauna of Japan. Part 51. Mammalian nematodes, V.” 9 (1), 105–121.  
b. YAMAGUTI, S., 1954.—“Parasitic worms mainly from Celebes. Part 9. Nematodes of fishes.” 9 (1), 122–133.  
c. YAMAGUTI, S., 1954.—“Parasitic worms mainly from Celebes. Part 10. Nematodes of birds and mammals.” 9 (1), 134–149.

(546a) Yamaguti gives redescriptions or measurements of 15 species of nematodes of which ten are from Japan, four from Korea and one from Saghalien. Those from Japan are: *Bourgelatia diducta* from *Sus leucomystax*; *Gyalocephalus capitatus* and *Trichostrongylus axei* from *Equus caballus orientalis*; *Oesophagostomum columbianum*, *Chabertia ovina*, *Haemonchus contortus* and *Cooperia curticei* from *Ovis aries*; *Trichostrongylus colubriformis* and *Ostertagia circumcincta* from Japanese sheep; and *Longistriata wolgaensis* from the rodents *Clethrionomys smithii*, *Apodemus s. speciosus* and *Microtus montebelli*. From Saghalien he obtained *Heligmosomum costellatum* in the voles *Clethrionomys r. rutilus* and *C. rufocanus bedfordiae*. Recorded from the Korean pony at Quelpart Island, Korea, are *Trichonema goldi*, *T. poculatum*, *T. longibursatum* and *T. bicoronatum*.

M.MCK.

(546b) Yamaguti describes 13 nematodes including three larval forms in fishes from Celebes. *Procamallanus annulatus* n.sp. from *Siganus* sp. differs from the most closely related *P. sigani* in body size, in the unequal, pointed spicules, in the presence of an internal, ring-like thickening of the buccal capsule and in the arrangement of caudal papillae; of these there are three pre-anal pairs and five post-anal pairs, all are slender except the terminal two. *Cucullanus*

*sigani* n.sp. from *Siganus* sp. is closest to *C. heterochrous* but the anterior swelling of the oesophagus is narrower than the posterior swelling and there are five post-anal and five pre-anal pairs of caudal papillae, two of the former being lateral. *C. armatus* n.sp. from *Arius* sp. is distinguished (i) by the spicules, which have a proximal tubular portion and a chitinous rod in the axis of the greater distal portion, which is apparently flanged laterally, and (ii) by the armature at the anterior end and on the inner surface of the false buccal capsule. *C. exiguis* n.sp. in *Lates calcarifer* has spicules twice as long (measuring 1·26 mm. to 1·28 mm.) as in the related *C. parvus* and differently arranged anal papillae, of which there are seven subventrally and two laterally on each side. The anal papillae also differentiate *C. arii* n.sp. in *Arius* sp. from *C. carellae* and *C. serratus*. *C. arii* and *C. armatus* possess a lateral recess in the false buccal capsule which leads into the subdorsal recess of the triradiate lumen of the oesophagus—a recess reported by Barreto in his species *C. lintoni* and *C. stossichi*. On re-examining his type specimens Yamaguti has verified the presence of this recess in *C. robustus*, *C. filiformis*, *C. himezi*, *C. cyprini*, *C. amadai*, *C. girellae*, *C. branchiostegi* and *C. pleuronectidis*. *Contracaecum arii* n.sp. also in *Arius* sp. differs from *C. trichiuri* in the greater length of intestinal caecum, ventricular appendix and spicules and in the smaller number of pre-anal papillae (14–20 pairs). Yamaguti reports, with a short description, a *Procamallanus spiralis* female from *Pseudorhombus arsius*, a *Contracaecum* sp. from *Sphyrna zygaena*, *Anisakis* sp. from *Leiognathus dussumieri* and *Porrocaecum* sp. from *Arius* sp. He finally tabulates details relating to recovered larvae of *Contracaecum*, *Porrocaecum* and *Raphidascaris*.

M.MCK.

(546c) The following nematodes are reported from Celebes: *Ternidens simiae* n.sp. from a monkey differs in measurements from *T. deminutus*, has three lamellae instead of two in each of the three buccal teeth and 23–24 instead of 22 elements in the leaf-crown. *Globocephalus simiae* n.sp. also from a monkey has no terminal caudal spike in the female and the spicules are smaller and the eggs larger than in *G. asmilius*. *Physaloptera tumefaciens macaci* n.subsp. found in a *Macacus* sp., is longer than the original *P. tumefaciens* and the eggs are smaller. *Cheilospirura hamulosa* from the jungle fowl *Gallus gallus*, *Arduenna strongylina*, *Oesophagostomum dentatum*, *Bourgelatia diducta* and *Setaria bernardi* from the pig, *Oesophagostomum maurum* and *Trichuris trichiura* from monkeys, and *Mecistocirrus digitatus* and *Setaria labiatopapillosa* from the buffalo are redescribed and some are compared with previous records.

M.MCK.

#### 547—Acta Parasitologica Polonica.

- a. TARCZYŃSKI, S., 1954.—“Wehrdikmansia cervipedis (Wehr et Dikmans, 1935) Caballero, 1945, pasożytem jelenia *Cervus elaphus* L. w Polsce.” **2** (7/14), 209–222. [English & Russian summaries pp. 221–222.]
- b. ŁUKASIAK, J., 1954.—“Badania nad występowaniem *Syphacia obvelata* (Rudolphi, 1802) Seurat, 1916 u myszy domowej (*Mus musculus* L.) w Warszawie i okolicy.” **2** (7/14), 223–237. [English & Russian summaries pp. 236–237.]
- c. DADLEZ, J., GERWEL, C. & KAMIŃSKI, A., 1954.—“Zastosowanie mieszaniny cyny metalicznej i jej związków w kuracji przeciwtasiemcowej.” **2** (7/14), 239–245. [English & Russian summaries pp. 244–245.]
- d. CZAPLIŃSKI, B., 1954.—“Rozmieszczenie i intensywność inwazji nicienia *Amidostomum anseris* (Zeder, 1800) u gęsi domowych w Polsce.” **2** (7/14), 275–298. [French & Russian summaries pp. 293–298.]
- e. GRABDA, B., 1954.—“Nowe stanowisko *Cephalogonimus retusus* (Dujardin, 1845)—przywry paszącej u żaby wodnej (*Rana esculenta* L.).” **2** (7/14), 299–302. [French & Russian summaries p. 302.]

(547a) *Wehrdikmansia cervipedis* was found in subcutaneous nodules of a *Cervus elaphus* in Poland. Of four nodules examined one contained only males and three only females. This is the only report of this nematode in Europe. It has apparently been imported with *C. canadensis* from America.

G.I.P.

(547b) Of 47 mice, mainly *Mus musculus*, from Warsaw and the neighbourhood, examined in the years 1937 to 1939, 54% were infected with *Syphacia obvelata*.

G.I.P.

(547c) Preliminary tests of tin and its compounds against tapeworms, made on dogs, showed that a powder containing a mixture of 85% tin, 14% stannous oxide and 1% stannous chloride was effective and not toxic. Five persons with *Taenia saginata* infections and one with *T. solium* were treated, a single course lasting six days. 0.1 gm. of stannous chloride was ground in a mortar with 0.9 gm. of kaolin, then thoroughly mixed with 1.4 gm. of stannous oxide and 8.5 gm. of chemically pure powdered tin. This was divided into ten doses and put into wafers and one of these was given thrice daily after meals. The worms were expelled, without scolices, during the second to third day. This treatment can be applied without interruption of the patient's work. The *T. saginata* cases were cured but the *T. solium* case was not. G.I.P.

(547d) Of 900 apparently healthy geese, 91.3% were found infected with *Amidostomum anseris* and 5.7% had characteristic pathological changes, but no worms. All the 15 districts of Poland investigated were infected and the mean number for each district varied from 144 to 25 worms per goose. There is a change in the intensity of infection from spring to autumn caused by climatic conditions but there is a time lag of two to three months. In winter the lag is longer. G.I.P.

(547e) *Cephalogonimus retusus* (Dujardin, 1845), previously known from France and the Caucasus, is now reported from *Rana esculenta* from Lake Jamno in Poland. It is smaller than the Russian form. G.I.P.

#### 548—Acta Veterinaria. Belgrade.

a. NEVENIĆ, V., ŠIBALIĆ, S. & CVETKOVIĆ, L., 1954.—[Une contribution à la connaissance de la faune parasitaire des lapins de garenne de Vojvodine.] 4 (4), 53–62. [In Serbian: French summary p. 62.]

(548a) By examination of the faeces of 1,503 hares and from autopsies on 86 hares in the territory of Vojvodine, it was ascertained that *Cittotaenia pectinata* was present in 9.25%, *Trichuris leporis* in 57.4%, *Trichostrongylus retortaeformis* in 24.6%, *Cysticercus pisiformis* in 14.55% and *Setaria labiatopapillosa* in one hare. The live animals with medium or heavy infections of *Cittotaenia pectinata*, *Trichostrongylus retortaeformis* or *Cysticercus pisiformis* were emaciated and under-developed. *Cittotaenia pectinata* was found in hares living in the immediate neighbourhood of rivers, canals or marshes. M.MCK.

#### 549—Acta Veterinaria. Budapest.

a. MATOFF, K. & JANTSCHEFF, J., 1954.—“Kann *Echinococcus granulosus* im Darm des Fuchses (*Canis vulpes*) sich zur Geschlechtsreife entwickeln?” 4 (4), 411–418. [Russian summary p. 418.]

(549a) The authors experimentally infected two groups of foxes and one control wolf, using organs infected with *Echinococcus granulosus* from cattle and sheep. The animals were autopsied at intervals and the intestinal contents and mucosa examined for worms. In the first series of eight foxes, three, killed 15 to 25 days after the infection, contained large numbers of immature worms. Another three killed after 32, 37 and 42 days, were negative. One fox, killed after 40 days, had one worm with two unripe segments and another, killed after 44 days, had three-segment worms but without eggs. In the second series of seven foxes, which were infected two to three times, the results agree with those from the first series and show that in foxes infection is acquired but tends to decrease quickly and spontaneously, disappearing after about 30 days. The autopsy of the wolf gave a small number of sexually mature worms with ripe eggs from the first infection 45 days earlier, a larger number of mature worms without eggs from the second infection 37 days earlier and numerous scolices from a third infection three days before the autopsy. These results show that the development of mature worms and simultaneous reinfections are possible in the suitable host but did not take place in the fox, which is therefore not a normal host for mature *E. granulosus*. G.I.P.

## 550—Acta Zoologica Sinica. Peking.

a. CHEN, H. T., 1954.—[On the taxonomy of *Prosthodendrium* Dollfus, 1931 and *Longitrema* gen.nov., with a description of two new species and a new variety (Trematoda: Lecithodendriidae).] 6 (2), 147-182. [In Chinese: English summary pp. 176-182.]

(550a) Chen reviews *Prosthodendrium*, emends the genus and removes eight of the existing species into a new genus *Longitrema* n.g. His material which was collected from rats and bats from Canton consists of six species, namely, *Prosthodendrium hepaticum* n.sp., *P. ratti* n.sp., *P. ovimagnosum compactum* n.var., *P. urna*, *P. ovimagnosum* and *P. mehrai*. These, except for *P. ovimagnosum*, are described in detail on the basis of the Canton material, together with a description of all the other species and sixty figures. Chen recognizes 25 species of *Prosthodendrium*, eight synonyms and three species *inquirendae*. *P. hepaticum* n.sp. is found in the liver and bile-ducts of *Scotophilus castaneus*; it differs from *P. ovimagnosum* and *P. ovimagnosum compactum* n.var. in that the testes are usually irregular or slightly lobed and that the ovary is more or less triangular, essentially tri-lobed with or without further branchings, and the lobes and branches are not as close together as those of *P. ovimagnosum* or *P. ovimagnosum compactum*. *P. ratti* n.sp., from the intestine of *Rattus rattus*, is similar to the *ovimagnosum* group in having an ovary larger than each testis but can be distinguished from them because the ovary is not lobed and lies posterior to the testes. *P. ovimagnosum compactum* n.var., from the intestine of *Scotophilus castaneus*, is very similar to *P. ovimagnosum* and *P. hepaticum* but is distinctly smaller with the organs very crowded together which results in the body appearing rather opaque; in the other two species the body is relatively transparent; the ovary is smaller than that of *P. ovimagnosum* and differs from that of *P. hepaticum* in the lobulations. Species that are considered synonymous are placed in parentheses after recognized species: *P. ovimagnosum* (*P. asada*), *P. ovimagnosum compactum* n.var. (*Lecithodendrium glandulosum porodavi*), *P. nokomis* (*P. buongermanii*), *P. mehrai* (*P. singularum*), *P. urna* (*L. loosii*), *P. cordiforme* (*L. cordiforme parvouterus*), *P. emollidum* (*P. paeminosum*) and *P. ascidia* (*L. pyramidum* and *L. scabrum*). Species *inquirendae* are *L. anticum* (Stafford, 1905), *L. posticum* (Stafford, 1905) and *L. cordiformelaxmii* (Bhalerao, 1926). *Longitrema* n.g. has an elongated oral sucker and mouth, as distinct from the round oral sucker and mouth of *Prosthodendrium*. The margin of the ovary is always entire and smooth, the reproductive organs (except the uterus) are never behind the acetabulum and the eggs are invariably larger than 30  $\mu$ . *Longitrema piriforme* is designated as genotype. New combinations with six of the eight valid species are *L. chilostomum* (Mehlis, 1831) (syn. *Lecithodendrium asciciooides* van Beneden, 1873); *L. longiforme* (Bhalerao, 1926) (syn. *Lecithodendrium longiforme allahabadi* Pande, 1935); *L. orospinosa* (Bhalerao, 1926); *P. luzonicum* (Tubangui, 1928); *L. bhaleraoi* (Pande, 1935) and *L. piriforme* (Yamaguti, 1939).

L.S.Y.

## 551—Ärztliche Wochenschrift. Berlin.

a. PARNITZKE, K. H., 1954.—“Die Hirncysticerkose im Röntgenbild.” 9 (40), 956-958.  
 b. WACHSMUTH, R., 1954.—“Beiträge zur Enterobiasis vermicularis (Oxyuriasis). IV. Phenothiazin und Blutbild.” 9 (50), 1192-1195.

(551a) Parnitzke describes the X-ray findings of a case of cerebral cysticercosis in a 45-year-old woman who had been subject to epileptic attacks for a period of five years. The various stages of calcification of the fifteen cysts seen are described. A.E.F.

(551b) Wachsmuth has studied published descriptions of cases of toxic effects (especially on the blood picture) caused by phenothiazine used against *Enterobius* infection. He finds that in every case too high a dose of phenothiazine had been administered. From these results, and from his own researches on the effect of phenothiazine on the blood, Wachsmuth concludes that Contaverm in a dosage of 60 mg. per kg. body-weight is safe. He does not recommend the use of “phenothiazine chocolate”, partly because of the danger of overdosage. A.E.F.

**552—Afrique Française Chirurgicale.**

- a. LIARAS, H., HOUEL, J. & PELISSIER, G., 1954.—“Le traitement du kyste hydatique du poumon.” **12** (6), 491-499.
- b. BOURGEON, R., PIETRI, H., PANTIN, J. P., GUNTZ, M. & APROSIO, N., 1954.—“Une complication du traitement des kystes hydatiques multiples du foie: la suppuration de la cavité résiduelle.” **12** (6), 525-526.
- c. RIVES, J., 1954.—“Intervention complexe pour kyste hydatique de l'hypochondre gauche.” **12** (6), 552-553.

**553—Agricultura Tropical. Bogotá.**

- a. CARDEÑOSA, R., 1954.—“Los nematodos y su control.” **10** (11), 37-39.

(553a) In the valley of the Cauca river in Colombia, *Heterodera marioni* and *Radopholus similis* are increasingly serious pests on tobacco, tomatoes and other crops. Cardeñosa urges the control of these nematodes by rotations with relatively resistant crops such as maize, application of suitable fertilizers (calcium cyanamide followed by ammonium sulphate), covering of the soil with a thick layer of decomposing organic matter, etc. Chemicals should be used only in cases of severe infestation. Tests so far have shown that D-D mixture and ethylene dibromide (Dow W-40) are the nematicides of choice. M.M.C.K.

**554—Agronomía. Lima.**

- a. SIMON F., J., 1954.—“Contribución al estudio de la anguilula dorada de la papa, *Heterodera rostochiensis*, Wollw.” **19** (77), 45-60.

(554a) Simon gives an account of *Heterodera rostochiensis* in Peru and of the method in use there for separating cysts from soil which he claims to be an improvement on the usual methods; in this method soil particles which are finer than the cysts are removed by compressed air before the sample is suspended in water. He recommends the continuation of crop rotations, the systematic mapping of centres of infestation, the intensified study of chemical control measures and the establishment of a nematological service to undertake studies of nematode attacks on cultivated plants. M.T.F.

**555—Algérie Médicale.**

- a. THIODET, J., 1954.—“Le traitement médical de l'hydatidose (2ème note): le traitement biologique.” **58** (7), 589-591.

(555a) Thiodet gives brief clinical notes on the results of treating four cases of hydatid cyst by intradermal injection of Pérez-Fontana's antigen. The cysts were not killed but the patients showed general improvement in their condition. Subjective symptoms were lessened and even disappeared and anaphylactic manifestations ceased. This biological method should be employed before and after operation or where surgical intervention is useless, as in multiple and disseminated infections and in vertebral and cerebral osseous echinococcosis. R.T.L.

**556—American Journal of Clinical Pathology.**

- a. KOPPISCH, E., 1954.—“Schistosomal granuloma of the lung.” [Correspondence.] **24** (12), 1409.
- b. RATHMELL, T., 1954.—“Schistosomal granuloma of the lung.” [Correspondence.] **24** (12), 1409.

(556a) Koppisch, commenting on the article by Rathmell *et al.* on “Visceral granulomas caused by migrating larvae of *Ascaris lumbricoides*” [for abstract see Helm. Abs., **23**, No. 63a], points out that none of the illustrations show ascaris larvae and that, as the figures 1 and 3 purporting to contain such larvae include parasite eggs and a pseudotubercle probably of schistosome origin, the case was probably one of schistosomiasis. R.T.L.

(556b) In reply to Koppisch's criticism [see No. 556a above] Rathmell states that the lesions were thought to be due to Ascaris larvae as an *Ascaris lumbricoides* was found in the gut, but on reviewing his material he now is of the opinion that the case was most likely one of schistosomiasis.

R.T.L.

### 557—American Journal of Pathology.

a. STONER, R. D. & GODWIN, J. T., 1954.—“The effects of adrenocorticotrophic hormone and cortisone upon acquired immunity to trichinosis in mice.” **30** (5), 913–918.

(557a) Stoner & Godwin immunized mice by infection with *Trichinella spiralis* larvae and studied the effects of treating the mice, after a challenging infection, daily with ACTH, cortisone, and cortisone and combiotic (a combination of crystalline penicillin and dihydrostreptomycin). ACTH effected a slight but not significant increase in mortality rate over that observed in untreated control animals. Cortisone and combined cortisone and antibiotic treatment however produced a significant breakdown of the acquired immunity to reinfection. Pathological study revealed no significant ulceration or inflammatory reaction about the adult worms in the intestine of cortisone-treated and untreated animals.

D.L.H.R.

### 558—American Potato Journal.

a. MAI, W. F. & SPEARS, J. F., 1954.—“The golden nematode in the United States.” **31** (12), 387–396.

(558a) This is a general paper outlining the importance of *Heterodera rostochiensis* as a pest of potatoes, its life-history, its distribution in the U.S.A., survey methods for its detection and precautionary measures which are necessary to prevent its introduction to clean land.

M.T.F.

### 559—Anais da Escola Superior de Agricultura “Luiz de Queiroz”. Piracicaba.

a. LORDELLO, L. G. E. & ZAMITH, A. P. L., 1954.—“Constatção da moléstia do ‘anel vermelho’ do coqueiro no Estado do Rio de Janeiro. Redescruição do agente causador—*Aphelenchoides cocophilus* (Cobb, 1919) Goodey, 1933 (Nematoda, Aphelenchidae).” **11**, 125–132. [English summary p. 131.]

(559a) Lordello & Zamith redescribe *Aphelenchoides cocophilus* which is associated with red ring disease in the coconut palm *Cocos nucifera*. This is the first time it has been found in the State of Rio de Janeiro. The males had shorter, and the females longer, tails than the 50  $\mu$  and 80  $\mu$  recorded, respectively, by Cobb for worms 1,000  $\mu$  long. In the present material males 824·7–1421·4  $\mu$  in length had tails measuring 30·6–36·7  $\mu$ , while the females, 830·8–113·8  $\mu$  long, had tails of 85·7–104  $\mu$ .

M.MCK.

### 560—Anais do Instituto de Medicina Tropical. Lisbon.

a. FRAGA DE AZEVEDO, J., FEIJÓ COLAÇO, A. T. & COSTA FARO, M. M. DA, 1954.—“As bilharzioses humanas no Sul do Save (Moçambique).” **11** (1), 5–120. [English & French summaries pp. 118–120.]

b. FRAGA DE AZEVEDO, J., FEIJÓ COLAÇO, A. T. & COSTA FARO, M. M. DA, 1954.—“Missão de estudo das bilharzioses humanas a Moçambique. Contribuição para o conhecimento das parasitoses intestinais humanas no Sul do Save (Moçambique).” **11** (1), 121–137. [English & French summaries p. 137.]

c. FRAGA DE AZEVEDO, J., MEDEIROS, L. DO C. M. DE, 1954.—“A identificação do *Planorbis metidjensis*, Forbes, do Algarve, pela morfologia dos órgãos genitais e rádula, sua comparação com os mesmos elementos do *Planorbis corneus*.” **11** (2), 231–240. [English & French summaries pp. 239–240.]

- d. FRAGA DE AZEVEDO, J., DAMASO PRATES, M. & DINIZ SAMPAIO, T., 1954.—“Sobre a morfologia do *Schistosoma* parasita dos bovídeos do Sul do Save.” **11** (2), 241–249. [English & French summaries pp. 248–249.]
- e. FRAGA DE AZEVEDO, J., COSTA, M. M. DA & CARVÃO GOMES, F. A., 1954.—“A susceptibilidade do *Planorbis metidjensis* ao *Schistosoma haematobium* da Guiné Portuguesa e ao *Schistosoma mansoni* de Moçambique.” **11** (2), 251–260. [English & French summaries p. 259.]
- f. SANTOS DIAS, J. A. T., 1954.—“Panorama noso-parasitológico veterinário em Moçambique.” **11** (3/4), 605–634. [English & French summaries pp. 631–632.]
- g. MARTINS, O. N., 1954.—“A propósito da ancilostomíase na Ilha de S. Tiago de Cabo Verde.” **11** (3/4), 665–673.
- h. MARTINS, O. N., 1954.—“Quatro casos de bilharziase vesical na cidade da Praia.” **11** (3/4), 675–679.

(560a) A comprehensive study of schistosomiasis in the province of Sul do Save, Mozambique, revealed vesical *Schistosoma haematobium* in 61·5% of 9,283 natives, mainly schoolchildren, and genital *S. haematobium* in 5 out of 50 native women. Faecal examinations disclosed *S. mansoni* in 11·85% of 2,841 natives, intestinal *S. haematobium* in 27 of these and *S. bovis* in one 13-year-old boy. Forty-seven European children examined for intestinal schistosomiasis were uninfected. High incidence of schistosomiasis corresponded with high intensity and whereas patchy distribution typified *S. mansoni*, vesicular schistosomiasis was uniformly distributed. In the individuals with the vesicular form there was little reduction in haemoglobin or number of red corpuscles per cu. mm. of blood although accompanied sometimes by bleeding of up to 30 c.c. per day. The vesicular infection increased eosinophilia, produced marked neutropenia, changed the protein content little but considerably reduced the albumin at the cost of increased globulin, especially  $\lambda$  globulin. The only molluscs found in the area with the human type of cercariae were *Physopsis africana*, *Biomphalaria pfeifferi* and the rarer *Pyrgophysa forskali*. As experiments showed *Physopsis africana* to be susceptible only to miracidia of *S. haematobium* and *B. pfeifferi* only to miracidia of *S. mansoni*, it is concluded that these snails are the respective vectors. Nine kinds of non-human, simple and fork-tailed cercariae, found in *P. africana*, *B. pfeifferi* and *Segmentina* sp., are figured, with their measurements, but not identified. As control measures the authors advise treatment with tartar emetic and miracil-D, installation of clean water supplies, and publicity and education, especially in schools. Molluscicidal control, except over small, heavily infected areas, is thought to be of little use. The installation and compulsory use of lavatories would be difficult to enforce and is not recommended. The article is accompanied by a full account of living customs, geographical and climatic characters, economic conditions and schistosome control measures in other African regions.

M.MCK.

(560b) Faecal examinations of 2,834 natives, mostly schoolchildren, in Sul do Save, Mozambique, showed 47·8% to be infected with helminths. *Ascaris lumbricoides*, present in 31·6% of 898 examined, was nearly three times as common as any other helminth. Of those examined for hookworm 5·6% were positive. *Taenia* infection was not encountered. The relatively low incidence of parasitic diseases is attributed to the dryness, the sandy soil and intense sunlight of a great part of the region which must have adversely affected the free phases of the parasites.

M.MCK.

(560c) Fraga de Azevedo & Medeiros describe in detail the genitalia and radula of *Planorbis metidjensis* Forbes from Algarve Province, Portugal. From a study of Baker's descriptions of *P. corneus*, a form unobtainable in Portugal for direct comparison, they conclude that the variety from Algarve is probably not a separate species. Nevertheless, pending further investigation, the authors propose to continue to use the name *Planorbis metidjensis*.

M.MCK.

(560d) Specimens of *Schistosoma bovis* were collected from cattle at the Lourenço Marques slaughterhouse, Mozambique. Their morphology is described and the various measurements are compared with those recorded for *S. bovis* by eight previous workers. The average length of the males was 13.358 mm. [13.558 mm. is given in the table] and that of the females 8.731 mm. In every case females were found in conjunction with small males only and did not protrude from either end of the gynaecophoric canal. M.MCK.

(560e) *Planorbis metidjensis* var. *dufouri* were exposed to miracidia of *Schistosoma mansoni* from experimentally infected *Cercopithecus aethiops rufoviridis* of Mozambique and *S. haematobium* from natives of Portuguese Guinea. Four months later short-tailed furcocercous cercariae were discharged by one of the batches of snails exposed to *S. haematobium*. These cercariae failed to infect mice. None of the other snails became infected. M.MCK.

(560f) In this review of the veterinary parasitology of Mozambique mention is made of *Ascaridia galli*, *Heterakis gallinae*, *Railletina tetragona* and *Davainea proglottina* in poultry; *Haemonchus contortus*, *Dictyocaulus filaria*, *Bunostomum phlebotomum* and *Protostrongylus rufescens* in ruminants; *Metastrengylus elongatus* and *Choerostrengylus pudendotectus* in pigs and of *Ancylostoma caninum*, *Dipylidium caninum*, *Taenia hydatigena* and *Dirofilaria immitis*, which was seemingly uncommon, in dogs. At the slaughterhouse of Beira in 1952 the livers of 90% of the cattle, which come from the plains of Angónia, were rejected on account of fluke infection, while at Lourenço Marques only 9.7% (2,293 livers) were rejected. At Lourenço Marques *Echinococcus granulosus* was responsible for liver infection in 68 (0.2%) and lung infection in 24 (0.1%) of the cattle; *Stilesia hepatica* was present in 0.43% of the cattle and in 76.6% of the sheep. *Stephanurus dentatus* was found in 832 (33.56%) of the pigs. Rejections on account of cysticerci numbered nine in cattle, ten in pigs and two in sheep. Goldstein's intradermal technique was inconclusive in diagnosing *Schistosoma bovis* which was common. M.MCK.

(560g) From faecal examinations for helminth ova undertaken at the hospital at Praia, Cape Verde Islands, from 1949 to 1952 inclusive, 316 out of 868 individuals were found to be positive. Hookworm was present in 213 individuals, most of whom had worked in Angola and São Tomé. M.MCK.

(560h) Of the four cases of *Schistosoma haematobium* infection recognized at the hospital at Praia, Cape Verde Islands, two had originated in Mozambique and two in Angola. M.MCK.

## 561—Anales de la Facultad de Medicina de Montevideo.

- a. COSCO MONTALDO, H., 1954.—“Quiste hidático del hígado. Contribución al diagnóstico precoz.” **39** (3), 249–266. [English summary pp. 265–266.]

## 562—Anales de la Facultad de Veterinaria del Uruguay.

- a. GRIMALDI, J. P., 1954.—“Hidatidosis del cerdo (*Sus scrofa doméstica*). Sobre localizaciones anatómicas en exámenes post-mortem e importancia de la inhalación en *Sus scrofa doméstica*.” **6** (1), 25–42. [English, French & German summaries pp. 39–40.]
- b. GRIMALDI, J. P., 1954.—“Hidatidosis (equinococcosis primitiva) natural de un ganglio linfático mesentérico de cerdo (*Sus scrofa doméstica*).” **6** (1), 45–60. [English, French & German summaries pp. 58–59.]
- c. CRISTI, G. A., 1954.—“Capilarosis traqueal en *Felis catus domesticus*. Primera constatación en el Uruguay.” **6** (1), 141–143.

(562c) *Capillaria aerophila* in the trachea of a domestic cat is recorded for the first time in this host in Uruguay. M.MCK.

**563—Anatomical Record.**

- †a. KNIGHT, Jr., P. L. & SCHIPPER, A. L., 1954.—“Studies on the metabolism of swine lungworms.” **120** (3), 790–791.
- †b. DOUGHERTY, E. C., 1954.—“Some effects of urea on the liver protein used in the nutrition of *Caenorhabditis briggsae* (Nematoda: Rhabditidae).” **120** (3), 804–805.
- †c. WILLEY, C. H., 1954.—“The relation of lymph and excretory systems in *Zygocotyle lunata*.” **120** (3), 810–811.
- †d. FASSULIOTIS, G. & WILLEY, C. H., 1954.—“The histological effects of the golden nematode, *Heterodera rostochiensis* on potato root.” **120** (3), 811.
- †e. BOYD, E. M. & PETERSEN, J. H., 1954.—“Parabiosis and the problem of transmission and immunity in rats infected with *Trichinella spiralis*.” **120** (3), 811–812.

(563a) In an isotonic medium *Metastrongylus elongatus* and *M. pudendotectus* survived under aerobic conditions *in vitro* for 14 days and less than three days anaerobically. A high amount of carbon dioxide was produced in the presence of oxygen. It was also demonstrated that these lungworms use succinate in their metabolism and that an enzyme resembling in activity succinic dehydrogenase may be present.

R.T.L.

(563c) Willey has followed the development of the “lymph” system in young *Zygocotyle lunata* raised experimentally in ducks and rats. In this species and possibly in other amphistomes the vessels hitherto believed to be lymph channels are identical with the primary excretory tubules of the cercaria. They retain their connection, at least in the immature stages, with the excretory vesicle. No additional vessels which could be interpreted as lymph vessels were found.

R.T.L.

(563d) During its migration in the root cortex the larva of *Heterodera rostochiensis* leaves a path of necrotic tissue and its secretion causes the formation of giant cells which extend into the vascular cylinder. The giant cell formation disrupts the phloem elements and decreases the amount of food transported by the plant. The histological changes in potato and tomato roots are essentially similar, but in the tomato the extension of the giant cells into the vascular system is greater.

R.T.L.

(563e) Experiments, briefly summarized in this abstract, confirm the findings of Malevich in 1940 [*Bulletin de Biologie et de Médecine Expérimentale de l' URSS*, 9, 204–207] that *Trichinella spiralis* can migrate to uninfected parabiont rats, and those of Zaiman *et al.* in 1953 & 1954 [for abstracts see Helm. Abs., 22, Nos. 70a, 70b, 70c and 23, Nos. 3b, 3c] that immunity also can be transferred to uninfected parabionts.

R.T.L.

**564—Annales de Dermatologie et de Syphiligraphie.**

- a. LAPEYSSONNIE, L., 1954.—“Note sur un foyer d'onchocercose cutanée découvert à l'occasion d'opérations de séro-dépistage des tréponématoses en A.O.F.” **81** (6), 644–651.

(564a) Of 59 natives in the region of Béréba, near Bobo-Dioulasso, French West Africa, who had lesions suggestive of framboesia tropica, only 19 were positive to the diagnostic serum test. The subsequent discovery of microfilariae of *Onchocerca volvulus* in the early lesions in a similar case from Guinea suggested that the microfilariae were responsible in the previous cases. The disease has been known in the area of Béréba since 1949.

M.MCK.

**565—Annales du Musée Royal du Congo Belge. C.—Zoologie.**

- a. MAHON, J., 1954.—“Contributions to the helminth fauna of tropical Africa. Tapeworms from the Belgian Congo.” *Série V*, **1** (2), 141–261.

(565a) Mahon describes, and in many cases illustrates, 88 species of cestode from various hosts in the Belgian Congo. Nine, including one genus, are new. *Raillietina (R.) dartevellei* n.sp. from *Gypohierax angolensis* is distinguished from *R. sphaeroides* and *R. vagandae*, the two other species of the genus so far recorded from accipitrine birds, by the length of the

† Abstract of paper to be presented at the 51st Annual Meeting of the American Society of Zoologists, December 28–30, 1954.

rostellar hooks ( $34\text{--}36\mu$ ) and the number of testes ( $25\text{--}35$ ). *R. (Parionella) bargetzi* n.sp. from *Gymnobucco bonapartei* may be differentiated from *R. (P.) bucerotidarum* and *R. (P.) bomensis* by the number and size of the rostellar hooks (250 hooks  $17\text{--}19\mu$  long, 170 hooks  $30\text{--}32\mu$  long and 200 hooks  $27\text{--}30\mu$  long respectively). *R. (P.) perreti* n.sp. from *Pycnonotus barbatus tricolor* is distinguished from *R. (P.) pycnonoti* and *R. (P.) bulbularum*, which also occur in species of *Pycnonotus*, by the number and size of the rostellar hooks (240 hooks  $8\text{--}9\mu$  long, 105 to 115 hooks  $15\text{--}22\mu$  long and 120 to 130 hooks  $20\text{--}23\mu$  long respectively). *Idiogenes pseudotidis* n.sp. from *Otis* sp. and *Eupodotis senegalensis* shows obvious affinities with *I. otidis* and *I. kori* but has a characteristic vagina. *Crossotaenia baeri* n.g., n.sp. is described from the bile-ducts of *Cephalobus* sp. and *C. sylviculator* but unfortunately none of the specimens had a scolex: the new genus, although belonging to the Anoplocephalinae, is distinct from other members of the subfamily in having frilly posterior borders to the segments, no internal or external seminal vesicles, the genital ducts in a different position relative to the excretory canals and the evolution of the uterus; it shows many similarities to *Thysanosoma* and especially to *Wyominia*. *Inermicapsifer congolensis* n.sp. from *Cricetomys dissimilis* and *Dasyurus bentleyae* is most closely related to *I. hyracis* but differs in being lancet-shaped instead of progressively widening and in length, being the longest member of the genus. *Dilepis bycanistis* n.sp. from *Bycanistes sharpei sharpei* is the first member of this genus to be recorded from the Bucerotiformes. *Choanotaenia ululae* n.sp. from *Bubo africanus* has a double crown of 26 hooks and this distinguishes it from *C. strigium* and *C. speotytonis* which have single crowns of 12 and 18 hooks respectively. *Hymenolepis aelleni* n.sp. from *Epomophorus wahlbergi haldemanni* is differentiated from the other ten species reported from bats by the number and size of the rostellar hooks (40 arranged in a single crown and  $26\text{--}30\mu$  long). There is a complete host list for the cestodes of the Belgian Congo, which includes 50 new geographical records, and an extensive bibliography.

S.W.

## 566—Annales de la Société Belge de Médecine Tropicale.

- a. SCHWETZ, J., BAUMANN, H. & FORT, M., 1954.—“Sur les schistosomes actuellement (en 1953) connus en Afrique.” **34** (4), 495–498.
- b. GILLET, J., 1954.—“Essai statistique sur la signification réelle en pathologie congolaise de la bilharziose intestinale à *Schistosoma mansoni*.” **34** (5), 713–726. [Discussion pp. 739–750.]
- c. MORRIS, R. M., 1954.—“The actual significance of infestation with *S. mansoni* as a factor causing ill-health.” **34** (5), 727–734. [Discussion pp. 739–750.]
- d. FRAGA DE AZEVEDO, J., 1954.—“Preuves cliniques et histo-pathologiques de l’importance de la bilharziose mansoni.” **34** (5), 735–737. [Discussion pp. 739–750.]
- e. LEBRUN, A., 1954.—“Méthodes de prophylaxie de la filariose à *Onchocerca volvulus*.” **34** (5), 751–760. [Discussion pp. 789–795.]
- f. GARNHAM, P. C. C., 1954.—“The control of onchocerciasis.” **34** (5), 763–767. [Discussion pp. 789–795.]
- g. MASSEGUIN, A., TAILLEFER-GRIMALDI, J. & LEVEUF, J. J., 1954.—“L’onchocercose en A.O.F. Travail des médecins du S.G.H.M.P. de l’A.O.F.” **34** (5), 769–788. [Discussion pp. 789–795.]
- h. FAÍN, A. & HERIN, V., 1954.—“Notes à propos d’un cas d’infestation humaine par un *Mesocestoidé* à Astrida (Ruanda-Urundi). Présence de ce cestode chez le chat et découverte de larves du type *Tetrathyridium* chez divers vertébrés.” **34** (6), 893–900. [Flemish summary p. 898.]
- i. LAGRANGE, E., 1954.—“Au sujet de la mort dans la bilharziose expérimentale.” **34** (6), 929–930.
- j. GRUNDERBEECK, R. VAN & PENSON, D., 1954.—“La taeniase en Ituri. Recherche d’une méthode de déparasitisation massive adaptée à l’Ituri. Effets taenifuges de la camoquin.” **34** (6), 981–997. [English & Flemish summaries p. 997. Discussion pp. 997–998.]

(566a) In an addition to their previous paper on the known schistosomes of Africa, Schwetz, Baumann & Fort [for abstract see Helm. Abs., 22, No. 471d] give the names of five schistosomes which they had then not mentioned because they were doubtful of the validity of their identification. *Bivitellobilharzia loxodontae* from an African elephant, described by Vogel & Minning, is now included by Schwetz and three of their drawings are reproduced.

D.L.H.R.

(566b) Gillet assesses the pathological importance of schistosomiasis mansoni in the known foci in the Belgian Congo. The incidence in different foci is very variable and is not always related to the severity of the disease. In some populations one group (e.g. mineworkers) may be almost free from symptoms of disease while another group (e.g. villagers) may be gravely affected, although the percentage infected in both groups is the same. Frequent exposure to large numbers of cercariae results in serious illness whereas infrequent exposure and small numbers of cercariae produce few or no symptoms and probably allow the establishment of a state of premunition. [The discussion is not abstracted.]

S.W.

(566c) Morris reviews the situation in Southern Rhodesia where *Schistosoma mansoni* has a patchy distribution and, although common, has an incidence of only about one quarter that of *S. haematobium*. The invasive stage in the form of the Katayama syndrome is occasionally seen. The possible effects of the adult worms in the body is discussed but most of the lesions are caused by the eggs; these are frequently wide-spread throughout the organs of the body and, following post-mortem examinations of 100 people dying from all causes, were found in the appendix in 6%, urinary bladder 8%, brain 4%, liver 23%, lung 10%, rectum 29%, spleen 3%, uterus and adnexa 9%. He discusses the clinical features of both the acute and chronic phases and the mental effects of the disease. In Southern Rhodesia schistosomiasis mansoni is not a fatal disease and, because of the comparatively light infections which occur, causes less ill health than it does in other countries where it is endemic. [The discussion is not abstracted.]

S.W.

(566d) Fraga de Azevedo considers schistosomiasis mansoni a disease of very great importance, particularly because of the marked liver involvement in many cases. In a recent survey in Mozambique it was shown that in children between 7 and 15 years old the incidence of liver enlargement was directly related to the incidence and severity of *Schistosoma mansoni* infection. The protein composition of the blood serum was also affected, the globulin fraction increasing and the albumin decreasing. [The discussion is not abstracted.]

S.W.

(566e) Lebrun reviews our knowledge of onchocerciasis in the Belgian Congo and outlines the main methods of control. Neither hexazin nor suramin is suitable for prophylaxis, the former because it does not destroy the adult worms and the latter because of the toxicity of large doses and the fact that it does not persist in the tissues. Excision of nodules is not practicable in mass treatment and the infection is frequently present without nodules being formed. Consequently eradication of the vector is the most practical method. The author describes the studies made of the life-history and behaviour of *Simulium damnosum* and of its breeding places and the very successful campaigns which have been carried out, notably by means of aerial spraying with D.D.T. or gammexane. [The discussion is not abstracted.]

S.W.

(566f) Garnham reviews recent work on the control of onchocerciasis. Prophylactic drugs have yet to be found. Although in Mexico the removal of nodules has proved very successful in eliminating the parasite, this method is not practicable in Africa. Personal prophylaxis by means of insect repellents such as dimethylphthalate is simple but this is not applicable to large populations or communities sparsely spread over large areas. Control of the *Simulium* species which are the vectors may be obtained by such means as bush-clearing and the use of insecticides. As a potential method of biological control the use of the microsporidia which attack the *Simulium* larvae is worthy of investigation. [The discussion is not abstracted.]

S.W.

(566g) Masseguin *et al.* estimate that in French West Africa more than 200,000 persons suffer from onchocerciasis. The percentages infected in different territories were: 4.7% of 996,789 persons in the Upper Volta, 2.8% of 513,781 in the French Sudan, 3.4% of 976,481 in French Guinea, 4.6% of 373,991 in Dahomey, 8.5% of 294,542 in the Ivory Coast, 0.1% of 176,619 in Senegal and 22 persons out of 43,697 in the Niger. The sera of infected persons showed increased gamma globulin and greatly diminished alpha globulin. Treatment normally

consists of dosing with tetrazan or notezine and removal of nodules where possible. Prophylaxis by means of eradicating the vectors has not so far been practicable because of the shortage of personnel and it seems unlikely that large scale campaigns can be undertaken in the near future. The paper is illustrated by a number of tables giving details of the incidence in particular areas together with data on blindness, clinical signs etc. [The discussion is not abstracted.]

S.W.

(566h) Fain & Herin report finding a specimen of *Mesocestoides* in a European child living at Astrida. Although the scolex was not recovered they consider that the tapeworm is probably a new species. An entire specimen of the same species was obtained from a domestic cat, probably the natural definitive host, in the same locality. The specimens are described and illustrated and their measurements are compared, in a table, with those of *M. lineatus*. Tetrahyridia were found in rodents, insectivores and birds, especially poultry and the local partridge, *Pternistes afer nyanae*; the last mentioned is believed to have been the source of infection in the child who had eaten a meal containing raw, chopped partridge meat about two months previously.

S.W.

(566i) Lagrange discusses the different sensitivity of albino mice, cotton-rats, rats and guinea-pigs to infection with *Schistosoma mansoni*. In infected mice intestinal haemorrhages occur frequently during the period of egg elimination. These may subside spontaneously or the mice may die without any blood being demonstrable in the faeces.

S.W.

(566j) The authors conclude that for mass treatments of *Taenia* infections in the Ituri region, camoquin is the remedy of choice. This drug has also the advantage of being highly effective against malaria. The dose rates recommended are 0·6 gm. for adults and 0·4 gm. for children, given in a single dose. If 2 gm. to 2·5 gm. of Stannoxyll is given the following day an even higher rate of cure is obtained. Some success was also obtained with quinacrine in a single dose of 0·7 gm. and thymol given at the rate of 0·25 gm. per day for eight days. Male fern extract, pelletierine, pumpkin seeds, a mixture of chloroform, chenopodium oil and castor oil, and larger doses of thymol are not recommended.

S.W.

### 567—Annali della Facoltà di Agraria di Portici della Università di Napoli.

a. SCOGNAMIGLIO, A., 1954.—“Esperimenti di lotta contro l'*Heterodera marioni* (Cornu Goodey.” Ser. 3, 20, 140-154.

(567a) In a green-house at Resina in which carnations were successively grown, the soil became infested with *Heterodera marioni*. Injections of D-D fumigant were made 33 cm. apart in the dosage of 3·5 c.c. and to a depth of 15 cm. Treatment was followed by light irrigation or the upper layer of the soil was rolled. The results were satisfactory and were better where rolling followed the injections. The average height of the carnation plants was 66·83 cm. and although 10% were infected, they carried only five to ten galls per plant, whereas on a control plot 100% of the plants were infected with more than 100 galls on the roots and the average height was only 22·63 cm.

R.T.L.

### 568—Annali della Facoltà di Medicina Veterinaria. Pisa.

a. PIEROTTI, P., 1954.—“Echinococcosi epatica in equino.” 7, 33-42. [English & French summaries p. 41.]  
 b. NESCOS, C., 1954.—“Enzoozia da acuaridi nel piccione.” 7, 69-85. [English & French summaries p. 82.]  
 c. ROMAGNOLI, A. & EBERLE, U., 1954.—“La prova sierofunzionale allo iodio in ovini sani ed affetti da alcune parassitosi epatiche.” 7, 86-92. [English & French summaries p. 92.]  
 d. CHINI, P. & EBERLE, U., 1954.—“Ricerche sul quadro siero-protidemico in bovini sani ed epatopazienti.” 7, 93-109. [English & French summaries p. 101.]

(568b) *Acuaria (Dispharynx) nasuta* is reported in the pigeon for the first time in Italy, where it was killing nearly a third of about 60 pigeons in a rearing establishment in Viareggio. At post-mortem the proventriculi presented heavy injuries with papilliform hyperplastic

involvement of the superficial glandular layer. Submucosa and muscle were also profoundly affected. Nescos lists the previous records of the parasite with its hosts and geographical distribution.

M.MCK.

(568c) Disorders of the liver have been diagnosed in bovines by the precipitation of proteins when a drop of serum is placed in contact with a drop of concentrated Lugol's solution. Tested on sheep, this method gave the expected negative result in 40 healthy lambs and 14 of 22 healthy adults. Of 26 sheep with hepatic *Echinococcus* infection, 72 with liver-fluke and 25 with both infections, all but six gave positive results. Those with severe or double infections were always positive.

M.MCK.

(568d) The protein, albumin and total globulin contents in the sera of cattle showed the highest average in 36 healthy cows, the lowest average in 24 healthy bullocks and an intermediate value in the case of 12 cows with hepatic *Echinococcus* or fluke infections. Contrary to Garner's findings, the average difference in the protein value of healthy cattle and that of infected cattle was at least 1.26 gm. per 100 c.c. of serum. In these experiments variations in diet were not considered.

M.MCK.

### 569—Annali della Facoltà di Medicina Veterinaria di Torino.

- a. BIONDO, G. & BENINATI, F., 1954.—“Osservazioni sulle proteine del siero di sangue di bovini sani e colpiti da echinococcosi polmonare.” **4**, 209-212.
- b. FALASCHINI, A. & MANTOVANI, G., 1954.—“Osservazioni sul comportamento delle proteine del siero di sangue in bovini da macello colpiti da lesioni parassitarie a sede epatica.” **4**, 213-217.
- c. AJMERITO, G., 1954.—“Contributo allo studio della filariosi cutanea nel cane.” **4**, 443-449.

(569a) The contents of protein and its constituents in the blood serum of 48 healthy cattle and of 12 cattle with *Echinococcus* of the lung are tabulated and discussed in relation to age. The average content of albumin in both the healthy and parasitized animals was over 50% of the total protein in the chemical and above 34.5% in the electrophoretic determinations.

M.MCK.

(569b) Study of the proteins in the blood serum of 47 cattle with liver-fluke and/or *Echinococcus* of the lung and/or liver suggested that serious liver infections produced an increase in globulin, particularly  $\gamma$ -globulin, with a consequent decrease in the ratio of albumin to globulin.

M.MCK.

(569c) Large areas of falling hair, dry flaky eczema and localized nodules on a dog in Italy were attributed to the presence, in the skin, of microfilariae in significant numbers which probably belonged to *Parafilaria acutiuscula*. Daily intramuscular inoculation of 5 c.c. of glucantime, containing 28.3% of antimony in 30% aqueous solution, was carried out for five days. Sodium-stovarsol was then given in five single intravenous injections (each containing 0.5 gm. in 10 c.c. of distilled water) at intervals of three days, concurrently with injections of 5 c.c. of glucantime on alternate days. The skin scrapings became negative and a month-and-a-half later the disease had cleared completely. No toxic effects were observed. Five genera of filariae of dogs are listed with their pathology.

M.MCK.

### 570—Annali di Radiologia Diagnostica.

- a. BENASSI, E., 1954.—“Dimostrazione radiologica dello scolice e del collo di tenia nell'ileo?” **27** (3), 253-257.

(570a) An X-ray photograph is reproduced which presents an image faintly resembling a tapeworm. It was taken to elucidate the cause of digestive trouble in a 48-year-old man who was subsequently found to be passing segments of *Taenia saginata*.

M.MCK.

**571—Archiv für Experimentelle Veterinärmedizin.**

a. HOHNER, L., 1954.—“*Cysticercus talpae* und *Cysticercus taeniaeformis* beim Sumpfbiber. Vorläufige Mitteilung.” 8 (4), 512-516.

(571a) Numerous *Cysticercus talpae* cysts were found singly under the serous membranes of *Myocastor coypus* on a breeding farm near Leipzig, on which *Mustela vison*, a definitive host of this tapeworm, were also kept. One case of *C. taeniaeformis* infection of *M. coypus* is also recorded.

G.I.P.

**572—Archives of Dermatology and Syphilology.**

a. MITCHELL, J. C., 1954.—“Schistosome dermatitis. Report of an outbreak of ‘swimmers itch.’” 70 (6), 805-808.

(572a) Fifty-three out of 88 picnickers who bathed in Lake Nipissing, Ontario on the same day showed skin manifestations of schistosome dermatitis. The itching commenced in ten minutes to three hours, reaching the greatest intensity in half-an-hour. Striking variability of the clinical course is described. Snails, identified as *Stagnicola catascopium*, were collected from the shore near the site of the picnic. They discharged actively motile fork-tailed cercariae.

R.T.L.

**573—Archives of Hygiene. Athens.**

a. SPHANGOS, J., 1954.—[On a case of distomiasis in Greece.] Year 1954, No. 1/3, pp. 83-85. [In Greek: English summary p. 85.]

(573a) [This paper contains the same information as that published in *Nosokomeiaka Chronica*, Year 1953. For abstract see Helm. Abs., 22, No. 616a.]

**574—Archives des Maladies de l'Appareil Digestif et des Maladies de la Nutrition.**

a. MERIEL, P., DARNAUD, C., FERRET, P., DENARD, G., MOREAU, G. & RIMART, J., 1954.—“Distomatose hépatique et syndrome de Löffler.” 43 (5), 613-616.

(574a) In the absence of eggs in the bile or faeces of a man suffering from fever, a swollen liver and violent pains in the liver region, *Fasciola hepatica* infection was diagnosed from the severe eosinophilia. Fleeting symptoms of allergic type (Löffler's syndrome) appeared in the lung. The patient was cured after two courses of emetine treatment.

M.MCK.

**575—Archivio Italiano di Scienze Mediche Tropicali e di Parassitologia.**

a. LIPPI, M. & PARONI, F., 1954.—“Terapia della cisti d'echinococco del polmone con la pneumoperitoneo.” 35 (4), 180-193. [English, French & German summaries p. 186.]  
 b. LIPPI, M. & D'ERCOLE, G., 1954.—“Terapia dell'anchilostomiasi con l'associazione di esilresorcinolo e tetrachloretilene per instillazione duodenale.” 35 (10), 489-494. [English, French & German summaries p. 494.]  
 c. QUATTROCCHI, G. & RUSSO, G., 1954.—“Primi dati statistico-clinici di due anni di attività di un dispensario antianchilostomiasico in Provincia di Messina.” 35 (12), 622-635. [English, French & German summaries pp. 634-635.]

(575b) Eight ancylostomiasis patients were cured by intubation of Hydroxylen, a hexylresorcinol-tetrachlorethylene mixture [containing 1 gm. of hexylresorcinol and 4 c.c. of tetrachlorethylene to 15 c.c. of peanut oil]. The dose, 15 c.c. to adults and 1 c.c. per year of age to children up to 12, was given in 200 c.c. of warm water, and, in the preceding three days, patients received luminal and papaverine as sedatives. Intubation was repeated at intervals of 8-10 days. No toxic effects were observed.

M.MCK.

### 576—Archivos Venezolanos de Patología Tropical y Parasitología Médica.

- a. HARTZ, H., 1954.—“Auto-infección con *Strongyloides stercoralis* en niños.” **2** (2), 193-207.
- b. HARTZ, P. H., 1954.—“Complicaciones de la ascaridiosis infantil.” **2** (2), 209-211. [English summary p. 211.]
- c. TEXERA, D. A. & SCORZA, J. V., 1954.—“Investigaciones sobre una forma bacteriana parecida al *Bacillus pinotii* hallada en Venezuela con acción patógena sobre el *Australorbis glabratu Say.*” **2** (2), 235-242. [English summary p. 241.]
- d. PEÑA GARCÍA, B., 1954.—“Presencia del *Ancylostoma duodenale* (Dubini, 1843) asociado al *Necator americanus* (Stiles, 1903) en casos de anquilostomiasis observados en Maracaibo (Estado Zulia, Venezuela).” **2** (2), 245-254.

(576a) Hartz describes two cases of auto-infection with *Strongyloides stercoralis* in two girls aged 18 months and 11 years. He discusses in detail the pathological changes found at autopsy. Auto-infection is probably commoner than the records would suggest. M.MCK.

(576b) The autopsy of two young children showed that immature Ascaris, present in massive quantities, had caused grave complications by invading the bile and pancreatic ducts. *Necator americanus* and *Trichuris trichiura* were present in numbers in both cases. M.MCK.

(576c) Texera & Scorza studied, in the laboratory, *Australorbis glabratu* collected from more than 40 foci in north-central Venezuela. Snails from El Paso, Villa de Cura, in the State of Aragua, showed symptoms of the haemorrhagic infection found by Dias in Brazilian snails [for abstract see Helm. Abs., 22, No. 720]. The infective bacteria were isolated and were similar to *Bacillus pinotii*, the organism found responsible by Dias. Serial inoculations of the bacteria were performed on healthy snails from a distant place. One series produced mortalities reaching 16 out of 20 snails at the fifth serial inoculation. The mortality declined to 7 out of 20 at the ninth inoculation. M.MCK.

(576d) Peña García reports that mixed infections of *Ancylostoma duodenale* and *Necator americanus* have been reported from a hospital in Maracaibo, Venezuela. As both hookworms are causal agents of endemic ancylostomiasis in rural Venezuela he suggests that in reports of faecal examinations they should both be included simply under Ancylostomidae. S.W.

### 577—Arkansas Farm Research.

- a. CRALLEY, E. M., 1954.—“Controlling white tip of rice.” **3** (4), 8.

(577a) White tip disease of rice [caused by *Aphelenchoides besseyi*] can be controlled by treating the seed with N-244 (33-p-chlorophenyl-5-methyl rhodanine) at the rate of 4 oz. of 10% formulation per bushel, or by soaking the seed for six hours in a solution of 0.75 gm. of bichloride of mercury per litre of water. Commercial varieties relatively resistant to the disease are Arkansas Fortuna, Nira 43, Bluebonnet, Improved Bluebonnet, Century 231 and Century 52. Susceptible varieties are Arkrose, Supreme Blue Rose, Early Prolific, Prelude, Cody, Caloro, Zenith, Rexark and Magnolia. M.T.F.

### 578—Arkiv för Zoologi.

- a. MONNÉ, L. & HÖNIG, G., 1954.—“On the embryonic envelopes of *Polymorphus botulus* and *P. minutus* (*Acanthocephala*).” Ser. 2, **7** (3), 257-260.
- b. MONNÉ, L. & HÖNIG, G., 1954.—“On the properties of the egg envelopes of various parasitic nematodes.” Ser. 2, **7** (3), 261-272.
- c. SCHUURMANS STEKHOVEN, Jr., J. H. & MAWSON, P. M., 1954.—“Free-living nematodes, mostly from Asia.” Ser. 2, **7** (3), 273-279.

(578a) The embryonic envelopes of *Polymorphus botulus* and *P. minutus* consist of (i) the outer membrane, evidently of protein, which was disintegrated by acids and alkalis, (ii) the fibrillar coat of a keratin-like protein, (iii) the shell, of a keratin-like protein probably containing some chitin, and (iv) the inner membrane which seems to contain more chitin than the shell. All the coats except the shell were birefringent. No lipid layer could be detected. M.MCK.

(578b) Study of the solubility and birefringence of egg envelopes of various Strongyloidea, Oxyuroidea and Ascaroidea revealed all intermediary forms between thin membranes and shells externally, and simple and complex lipid coats internally. External membranes and shells were birefringent. The lipid coat was either thin and isotropic (Strongyloidea) or thick and birefringent (Oxyuroidea, Ascaroidea) exhibiting in some cases a strange birefringence. In the 15 strongyloid genera studied, the lipid coat was covered by a single membrane consisting chiefly of quinone-tanned proteins. This membrane was thickened into a shell in *Nematodirus*, *Nematodirella* and *Syngamus*. In *Passalurus*, *Enterobius*, *Oxyuris*, *Syphacia* and *Aspiculuris* the lipid coat was covered by two shells. The external one was composed of quinone-tanned proteins and constructed of rods arranged perpendicularly to the surface. The inner shell, supposedly of chitin, was not operculate but presented under the operculum of *Passalurus* and *Syphacia* a pronounced thickening. In the eggs of *Heterakis*, *Paraspisodera*, *Ascaridia*, *Ascaris*, *Parascaris* and *Toxocara* the lipid coat was covered by a shell made probably of protein lamellae interposed with chitin. Surrounding this shell was a membrane of quinone-tanned proteins. The innermost layer, the lipid coat, is remarkably thick in *Ascaris*, *Parascaris* and *Toxocara*. In the fresh uterine egg of *Ascaris suum*, many chemicals attacked the additional mamillated surface layer, but in *A. suum* eggs from the faeces, this layer was unusually resistant.

M.MCK.

(578c) *Plectus effilatus* n.sp., represented by a single juvenile from a subterranean river at Grotte de Bétharram, France, is characterized by a tail 10·2 times the anal diameter in length. The basal 20% of the tail is finger-shaped, the remainder is filiform and ends bluntly. A single male of *Limnomyrmis falcispiculum* n.sp., found associated with moss in Elbourz, north-east of Tehran, Iran, is very similar to that of *L. borealis* but the tail is longer and the spicule relatively shorter. The male of *Actinolaimus chitwoodi*, now found for the first time, is reported from India. The bluntly rounded tail is a little shorter than the anal breadth. There are three large, low, median pre-anal swellings, each a spicule length apart, the hindermost being the same distance from the anus. Two longitudinal rows, each of seven pre-anal papillae, are followed by one median post-anal papilla. Measurements and/or short descriptions are given for *Dorylaimus stagnalis* collected in Iran, Madagascar and Turkey, *Dorylaimus* sp., probably *obtusicaudatus*, from Greece and Turkey, *Actinolaimus filipjevi* and a juvenile *Mononchus papillatus* from Iran, *Trilobus gracilis* var. *typicus* from Turkey, a juvenile *Oncholaimus* sp. from Madagascar and *Limnomyrmis* sp. from India. The posterior end of a mermithid in Turkey and a juvenile mermithid in Afghanistan were also found.

M.MCK.

### 579—Arquivos Brasileiros de Medicina.

- a. ANDRADE, Z. A. & RODRIGUES, G., 1954.—“Manifestações pseudo-neoplásicas da esquistosose intestinal.” **44** (11/12), 437-444. [English summary p. 444.]

(579a) Suspected carcinoma of the sigmoid causing chronic obstruction in two patients proved, on operation, to be thickening of the gut associated with lesions caused by *Schistosoma mansoni* eggs. In one case the excised portion was ulcerated on the inner surface and in the other there was an annular thickening with polyps internally.

M.MCK.

### 580—Atti della Società Italiana delle Scienze Veterinarie.

- a. PANEBIANCO, F., 1954.—“Modificazioni ematiche in vitelli con microascaridiosi sperimentale.” **8**, 520-521. [English & French summaries p. 521.]
- b. BOTTI, L., 1954.—“Adenocarcinomatosi epatica in cane, associata ad infestazione massiva da *Opisthorchis felineus* Rivolta 1884.” **8**, 523-526. [English & French summaries p. 525.]
- c. ROMAGNOLI, A., 1954.—“La bilirubinemia in ovini sani ed affetti da alcune parassitosi epatiche.” **8**, 682-685. [English & French summaries p. 685.]
- d. ROMAGNOLI, A., 1954.—“La colesterolemia in ovini sani ed affetti da alcune parassitosi epatiche.” **8**, 685-689. [English & French summaries p. 689.]
- e. VITALE, G., 1954.—“Sulla frequenza della echinococcosi, distomatosi e cisticercosi nei bovini macellati in Messina.” **8**, 689-692. [English & French summaries p. 690.]

- f. PIEROTTI, P., 1954.—“Echinococcosi in equino.” 8, 692–694. [English & French summaries p. 694.]
- g. BATTELLI, C., 1954.—“L'oncocercosi nodulare dello zebù eritreo.” 8, 716–719. [English & French summaries p. 719.]
- h. BOTTI, L. & BONO, G. DEL, 1954.—“Prove *in vitro* sulla schiusa di uova di *Neoascaris vitulorum* cimentate con mestruo a pH diverso. (Nota preventiva).” 8, 804–806. [English & French summaries pp. 805–806.]
- i. DEIANA, S., 1954.—“Osservazioni sulla penetrazione delle cercarie di *Schistosoma bovis* (Sonsino, 1876) nella pelle del coniglio.” 8, 806–807. [English & French summaries pp. 806–807.]
- j. SALUTINI, E., 1954.—“Una sindrome clinica da distomatosi—tumore epatico in un cane.” 8, 827–829. [English & French summaries p. 829.]

(580a) Blood tests were conducted on seven calves which had each received one or more meals containing about 200 embryonated [the English summary says undeveloped] eggs of *Neoascaris vitulorum*. The chief alteration was eosinophilia, which reached values up to 30% in those infected five or six times.

M.MCK.

(580b) Adenocarcinomatous growths in the liver, lungs and bronchial lymph glands of a dog in Pisa were associated with massive infection of *Opisthorchis felineus*.

M.MCK.

(580c) The total bilirubin content in the blood of 23 healthy sheep slaughtered at Pisa was nil to 2·04 mg. per 100 c.c. of serum, the free bilirubin averaging 0·33 mg. and the absorbed averaging 0·8 mg. per 100 c.c. of serum. In 19 sheep with Echinococcus in the liver, 40 with liver-fluke and 35 with both parasites, the total bilirubin remained normal but the free bilirubin tended to increase, and the absorbed to decrease, with the severity of infection.

M.MCK.

(580d) In nine sheep in which the liver was seriously infected with Echinococcus and liver-fluke the cholesterol content of the blood ranged from 50 mg. to 100 mg. per 100 c.c. of serum, whereas in 11 healthy sheep this was 24 mg. to 75 mg. per 100 c.c. of serum. In 13 sheep with Echinococcus only, 13 with liver-fluke only and 16 lightly affected by both parasites the cholesterol values varied little from the normal.

M.MCK.

(580e) At the municipal abattoir of Messina, between August 1953 and August 1954, 754,400 kg. of lungs and 609,840 kg. of the livers of cattle were rejected with Echinococcus infection. The number of animals in which Echinococcus was present in the lung only was 766, in the liver only 160, and in both organs 418. The rejected fluke-infected livers totalled 818,200 kg. Cysticercus was met during the period in 127 of the 7,822 cattle less than three years of age and in four of the 2,734 over three years of age; most of those infected originated from the province of Messina.

M.MCK.

(580f) In horses slaughtered at the abattoirs of Catania, Messina, Leghorn and Pisa the incidence of Echinococcus cysts reached over 1·5%. In most instances the cysts were confined to the liver.

M.MCK.

(580g) [This paper also appears in *Vet. Ital.*, 1955, 6, Suppl. pp. 274–277. For abstract see Helm. Abs., 24, No. 307b.]

(580h) *In vitro* the gastric juice of calves, with a pH of 2 to 4·1, accelerated the segmentation of developing eggs of *Neoascaris vitulorum*. Within some hours it ruptured the shell and released, dead, any mature embryos. If, after 1–3 hours in this juice, the eggs were transferred to the intestinal juice of calves at a pH of 7·5–8·2, larvae rapidly emerged alive. Most larvae emerged alive if the eggs had been kept for 60 hours at 38°C. in fluid from the rumen or omasum of adults (pH 6·6–7·2); but, if placed afterwards in juice from the abomasum (pH 3) for an hour, they lost most of their vitality, which may account for the rarity of infection in adult cattle.

M.MCK.

(580i) [A fuller account of this paper appears in *Riv. Parassit.*, 15, 373–380. For abstract see Helm. Abs., 23, No. 503h.]

(580j) This is a clinical discussion of the case recorded by Botti [see No. 580b above] of a dog with massive *Opisthorchis felineus* infection and adenocarcinoma of the liver and lung.

M.MCK.

### 581—Auburn Veterinarian. Alabama.

- a. WEATHERFORD, T. W., 1954.—“The diagnosis and treatment of canine heartworm, *Dirofilaria immitis*.” **10** (2), 82–90, 126–127.
- b. BAILEY, W. S. & THORSON, R. E., 1954.—“The chronology of an outbreak of parasitic gastroenteritis of cattle.” **10** (2), 97–101.

### 582—Australian and New Zealand Journal of Surgery.

- a. FITZPATRICK, S. C., 1954.—“The sedimentation of hydatid scolices.” **24** (2), 109–111.

(582a) The rate and completeness of sedimentation of the scolices in a hydatid cyst play an important part in the success or failure of surgical treatment. Fitzpatrick has shown that all suspended scolices in an unruptured cyst at rest will sediment within one minute.

S.W.

### 583—Australian Plant Disease Recorder.

- a. FISHER, J. M., 1954.—“Root-knot of peaches—*Meloidogyne javanica*.” **6**, p. 60.

(583a) *Meloidogyne javanica* has been found on peach root-stocks growing in nematode-resistance trials at Gosford, New South Wales. This is the first record of this species in New South Wales. Its distribution is so far unknown but *M. incognita* is wide-spread in the Gosford area.

M.T.F.

### 584—Beten-Vallar-Mossar. Uppsala.

- a. BINGEFORS, S., 1954.—“Några resistensfrågor inom vallväxtförädlingen.” **6**, 33–36.

(584a) Resistance to different diseases in grasses and legumes is discussed. Selection for resistance to stem nematode in red clover has given very rapid results also in very susceptible strains.

S.B.

### 585—Biochimica et Biophysica Acta.

- a. RATHBONE, L. & REES, K. R., 1954.—“Glycolysis in *Ascaris lumbricoides* from the pig.” **15** (1), 126–133. [French & German summaries p. 133.]

(585a) Rathbone & Rees have demonstrated glycolysis in cell-free preparations of muscle, ovary and testis of *Ascaris lumbricoides* from the pig, and have studied in detail the various steps in glycolysis in muscle preparations; phosphoglyceric acid accumulated in the muscle preparations. Santonin at concentrations of  $10^{-5}$  and  $10^{-6}$  M,  $\alpha$ -naphthol at  $10^{-4}$  M and  $10^{-5}$  M, and hexylresorcinol at  $2 \cdot 10^{-4}$  M and  $5 \cdot 10^{-5}$  M were without effect on glycolysis.

S.W.

### 586—Boletim Pecuário. Lisbon.

- a. ALVES DA CRUZ, A. & RODRIGUES DA COSTA, A., 1954.—“A tetrámerose e a acuariose em columbídeos.” **22** (3), 3–22. [English & French summaries p. 21.]
- b. CARRILHO, J. A. & BORGES FERREIRA, L., 1954.—“As parasitoses na zona da Ria de Aveiro. (Subsidio para o estudo das parasitoses regionais).” **22** (3), 23–45. [English & French summaries p. 45.]
- c. NUNES PETISCA, J. L., 1954.—“Eosinofilia local nos processos parasitários.” **22** (3), 47–60. [English & French summaries p. 59.]

(586a) Birds dying from weakness in a group of about 100 pigeons in Lisbon were found to have heavy infections of *Acuaria (Dispharynx) spiralis* and *Tetrameres fissispina*. There was retention of food in the crop and gizzard, ulceration and a gelatinous lining in the

proventriculus, while the outer muscular layer of the proventriculus wall showed hypertrophy and intense cellular infiltration. In the crypts, adenopapillomatous proliferation was present with marked epithelial desquamation. Nineteen birds succumbed. Deaths ceased after treatment with thymolized oil and male fern extract but no efficacy was attributed to the latter. The histopathology of the proventriculus is shown in five photomicrographs.

M.MCK.

(586b) Fourteen Ile-de-France sheep brought to Ria de Aveiro, in Portugal, to interbreed with a local flock, became seriously affected with parasites during the two-and-a-half years of observation. The helminths involved were *Moniezia expansa*, *Coenurus cerebralis*, *Echinococcus polymorphus*, *Cysticercus tenuicollis*, *Cystocaulus ocreatus*, *Dictyocaulus filaria*, *Haemonchus contortus*, *Chabertia ovina*, *Ostertagia circumcincta* and *O. trifurcata*. The last two constitute new records for Portugal. Sublingual oedema was found without any signs of liver-fluke. Perhaps a periodically high salinity may render the water of puddles unsuitable for the molluscan vector. The symptoms of *Dictyocaulus filaria* infections were adequately reduced by intratracheal injections of iodized substances. The commercial preparations "Feno strongil", "Pulmo strongil" and "Fenostrongil Sanitas" proved equally effective in lowering infections, while successive administrations of "Tricostrongil Lil" (containing copper sulphate) eradicated *Moniezia expansa*. The individual wool production and live weight of some of the local and imported sheep, observed in 1950 and 1951, are tabulated. M.MCK.

(586c) In a study of its frequency and intensity in cattle, pigs, sheep, goats and rabbits, local eosinophilia was found in 20 out of 23 animals with *Echinococcus* infection, 17 out of 20 with liver-fluke and 20 out of 31 with strongylosis. Contrary to the conclusions of Bonnin & Moretti (1952), local eosinophilia also occurred in the observed cases of ruptured *Echinococcus* cysts. M.MCK.

### 587—Boletín. Facultad de Agronomía y Veterinaria, Universidad de Buenos Aires.

- a. ROVEDA, R. J., 1954.—"Bibliografía zooparasitológica veterinaria Argentina." No. 32, 67 pp.

### 588—Boletín de Información. Consejo General de Colegios Veterinarios de España.

- a. MARTÍNEZ PASTOR, L., 1954.—"Contribución al estudio de la equinococosis en el perro. Lucha antihidatídica española." Suplemento Científico, 8 (45), 457-466.

(588a) In the abattoir at Valladolid, in Spain, *Echinococcus granulosus* was found in the livers and lungs, respectively, in 5·2% and 7·08% of 1,356 cattle; 21·8% and 19·6% of 5,038 sheep and goats; and 20·5% and 13·1% of 384 pigs. The previous record of the predominance of hepatic infection in cattle at this abattoir is considered erroneous. Of 95 stray dogs caught in Valladolid, 12 harboured *E. granulosus*. M.MCK.

### 589—Boletín de la Oficina Sanitaria Panamericana.

- a. ANON., 1954.—"Recomendaciones formuladas por la conferencia nacional de 1954 sobre la triquinosis." 37 (4), 438-443.

(589a) The National Conference on Trichinosis held in Chicago in 1954 recommended that piggeries should have sound garbage-cooking equipment before receiving a licence; that instruction should be organized on the working and maintenance of such equipment; that notices be displayed in shops urging the thorough cooking of pork; and that the Atomic Energy Commission might determine the cost of irradiating pork on a commercial scale. So far, 41 States in the U.S.A. require the cooking of garbage fed to pigs, but not all enforce it. M.MCK.

**590—Boletín Trimestral de Experimentación Agropecuaria. Lima.**

- a. COMBE, I. & SUÁREZ G., L., 1954.—“Susceptibilidad y resistencia de diversos cultivos al ataque del nematodo, *Heterodera marioni*.” **3** (2), 9-12.
- b. BAZÁN DE SEGURA, C., 1954.—“Los nematodos y las enfermedades radiculares del algodonero en el Perú.” **3** (4), 3-4.

(590a) Of a number of crops tested in soil infested with root-knot nematodes (*Meloidogyne* sp.), the most susceptible were Indian hemp, cucumber and squash. Moderate resistance was shown by cotton and soya beans, while lucerne, sorghum and maize were highly resistant.

M.T.F.

(590b) Infection of cotton plants with *Meloidogyne incognita* var *acrita* is becoming alarming along the central coast of Peru. Of two hundred young plants examined all were infected, but their sprouting was vigorous unless fungi had attacked the lesions caused by the nematodes. On another occasion the nematodes acting alone were observed to impede sprouting.

M.MCK.

**591—Bollettino della Società Italiana di Biologia Sperimentale.**

- a. NIGRO, A., 1954.—“Sulla contrattura acetilcolinica del muscolo dorsale di sanguisuga.” **30** (6), 693-695.
- b. NIGRO, A., 1954.—“Effetti delle variazioni lente di temperatura ambiente sul muscolo dorsale di sanguisuga.” **30** (6), 695-697.
- c. NIGRO, A., 1954.—“Azione di sostanze diverse sugli effetti prodotti dal caldo e dal freddo sul muscolo dorsale di sanguisuga.” **30** (6), 697-698.
- d. NIGRO, A., 1954.—“Attività ritmica automatica del muscolo dorsale di sanguisuga.” **30** (6), 699-701.
- e. VENDRAMINI, R. & MAGAUDDA-BORZI, L., 1954.—“Proposta di una reazione intradermica per la diagnosi di massa dell'anchilostomiasi.” **30** (7), 783-785.
- f. BRUNI, A. & PASSALACQUA, A., 1954.—“Sulla presenza di una mesomucinasi (jaluronidasi) in *Ancylostoma duodenale*.” **30** (7), 789-791.
- g. BENINATI, F. & LEO, S. DI, 1954.—“Osservazioni sul comportamento delle reazioni di labilità serica e sulla composizione del siero di sangue in bovini colpiti da echinococcosi epatica.” **30** (8/11), 1140-1143.
- h. DEIANA, S., 1954.—“Fattore diffusore e cercarie di *Schistosoma bovis*.” **30** (12), 1222-1224.
- i. NIGRO, A., 1954.—“Attività elettrica del muscolo dorsale di sanguisuga in condizioni sperimentali varie.” **30** (12), 1438-1441.

(591e) [A fuller account of this paper is published in *Nuovi Ann. Igiene*, 1955, **6**, 81-89. For abstract see Helm. Abs., **24**, No. 267c.]

(591f) Bruni & Passalacqua found that the viscosities of mucin solutions were reduced under the influence of extracts of *Ancylostoma duodenale* and of bull testes, thus showing the presence of a mucinase in both extracts. The hookworm preparation reduced the viscosity of the original solution to a greater degree, in proportion to dry weight in the extract, than did the testes preparation. These results indicate that the “spreading capacity” observed when *A. duodenale* extracts are injected intradermally is attributable to enzyme action.

M.MCK.

(591g) Beninati & Leo determined the protein contents, percentage of albumin and refractory indices of the sera of 83 cattle infected with hydatid and of 65 without the parasite. Within the limits of the experiment the results tended to support the theory that hydatid infection interferes with the composition of the serum and with the reactions to serum lability tests.

M.MCK.

(591h) Deiana concluded from injecting aqueous extracts of *Schistosoma bovis* cercariae into rabbits and guinea-pigs that (i) these cercariae contain substances which manifest a “spreading capacity” (or “spreading factor”) when injected intradermally, (ii) the spread of the injected extract is more marked when the cercarial concentration is greater and (iii) the active substance is probably derived from the penetration glands.

M.MCK.

**592—Bollettino della Società Medico-Chirurgica di Modena.**

- a. MARZULLO, F., MASONI, S. & TAPARELLI, F., 1954.—“La terapia acridinica della teniasi.” **54** (6), 626–637.
- b. MARZULLO, F. & TAPARELLI, F., 1954.—“Osservazioni statistiche sugli esami coprologici praticati nel triennio 1950–53.” **54** (6), 638–641.

(592a) Fifty-four persons harbouring tapeworms (usually *Taenia saginata*, occasionally *T. solium*) were given liquid or semi-liquid food for a day followed by a purge in the evening. The next morning atebrin tablets were administered on an empty stomach at intervals of five minutes, to a total dose of 0.1 gm. per 10 kg. body-weight. Forty people expelled tapeworms with scolices and ten passed proglottides and were cured. Three of the four persistent infections disappeared after treatment with male fern extract. A high proportion of the patients suffered headaches and vomiting although measures had been taken to minimise the latter. M.MCK.

(592b) Faecal examinations of 336 persons in the province of Modena, Italy, between 1950 and 1953 showed that *Taenia saginata* was present in 28, *T. solium* in 9, *Trichuris trichiura* in 27, *Ascaris lumbricoides* in 9, *Ancylostoma duodenale* in 4 and *Strongyloides stercoralis* in 4. M.MCK.

**593—Brasil-Médico.**

- a. MARQUES, R. J., 1954.—“Incidência de parasitas intestinais em 1,000 pacientes da secção de gastroenterologia de um consultório particular da cidade do Recife.” **68** (1/5), 3–11.

**594—British Journal of Animal Behaviour.**

- a. TAYLOR, E. L., 1954.—“Grazing behaviour and helminthic disease.” **2** (2), 61–62.

(594a) Taylor suggests that the collection of data on the grazing habits of animals on pasture would give a better insight into the epidemiology of helminth infections. Horses do not feed on those parts of a field where they defaecate. Cattle show less adaptation. The absence of coprophobia in sheep may be related to the sparse conditions of mountain grazing of primitive wild sheep although the high selectivity of their grazing, e.g. on clover, may give rise to heavy nematode infections. R.T.L.

**595—British Journal of Radiology.**

- a. RUBIN, E. L., WHITWELL, F. & WADDINGTON, J. K. B., 1954.—“On the perivesicular air-cap of pulmonary hydatid cysts.” **27** (324), 676–679.

(595a) A case of abscess of the lung is described and illustrated in which a homogeneous round shadow gave an X-ray picture indistinguishable from the perivesicular air-cap occasionally seen in hydatid cyst of the lung and, when present, considered pathognomonic. R.T.L.

**596—British Veterinary Journal.**

- a. PARRELL, I. W., 1954.—“The sequence and the levels of the helminth infestations in Scottish hill sheep.” **110** (12), 499–507.

(596a) In this article, which is a synopsis of seven previous contributions on the helminth infestations in Scottish hill sheep, Parnell shows the average levels of infestation at different times of the year of the species of greatest pathogenic importance. In most of Scotland *Ostertagia* spp. and, in some districts, *Nematodirus* spp. are the first to infect lambs in sufficient numbers to do damage. In late summer and early autumn breeding sheep often have heavy infections of *Trichostrongylus* spp. and *Ostertagia* spp. In lambs at this time *Trichostrongylus* spp., *Bunostomum trigonocephalum* and sometimes *Haemonchus contortus* are important. *B. trigonocephalum* persists in adult sheep throughout the year. During the late winter and early spring *Oesophagostomum venulosum*, *Ostertagia* spp., *Trichostrongylus* spp., *Chabertia*

*ovina* and, later, *H. contortus* may be very numerous in hoggs. Also at this time of the year infections of these parasites, with the exception of the first, increase in gimmers and ewes. The incidence of liver-fluke varies considerably even from "heft" to "heft". D.M.

### 597—Bulletin of the Faculty of Agriculture, Kagoshima University.

- a. KOUNO, I. & NIIMI, D., 1954.—[Studies on 'Kose' or 'Wahi' disease in cattle. I. Parasitological investigation on all filariae in cattle in Japan.] No. 3, pp. 138-150. [In Japanese: English summary p. 150.]
- b. NIIMI, D. & KOUNO, I., 1954.—[Studies on 'Kose' or 'Wahi' disease in cattle. II. Etiological investigations.] No. 3, pp. 151-162. [In Japanese: English summary p. 162.]

(597a) "Kose" or "Wahi" is an elephantiasis-like disease long known in native black cattle in Japan. As Oguni had attributed the disease to an infection with *Setaria*, Kouno & Niimi have investigated all the filariid infections of cattle in Japan. They find that *Setaria marshalli* and *S. digitata* occur in 50% to 80% and *Onchocerca gutturosa* in 90%. The microfilaria of *Setaria* can be differentiated from that of *Onchocerca* on its size, form and structure. Two stages of *Onchocerca* microfilaria are illustrated by photographs. R.T.L.

(597b) In a further study of "Kose" in Japanese cattle Niimi & Kouno find that the microfilariae of *Setaria* occur in the circulating blood only and do not produce skin lesions whereas those of *Onchocerca gutturosa* cause remarkable inflammatory lesions in the skin. 90% of the cattle have these lesions but as they are usually invisible the animals are thought to be healthy. Elephantoid lesions occasionally develop usually accompanied by itching. Although the microfilaria is the source of the disease an allergy must account for its pathogenesis. R.T.L.

### 598—Bulletin of Marine Science of the Gulf and Caribbean.

- a. HUTTON, R. F., 1954.—"Metacercaria *owreeae* n.sp., an unusual trematode larva from Florida Current chaetognaths." 4 (2), 104-109.

(598a) *Metacercaria owreeae* n.sp., from the trunk coelom of *Sagitta enflata*, *S. hexaptera* and *S. lyra*, is figured and described from formalin preserved material of plankton hauls from the Florida Current, east of Miami. The new species was present in 0.14% of 5,767 specimens. In contrast to other larval and adult trematodes the caeca extend into a pair of posterior appendages. G.I.P.

### 599—Bulletin Médical de l'Afrique-Occidentale Française.

- a. BARROUX, P., D'ALMEIDA, J. & LETAC, R., 1954.—"Péritonite par perforation vésicale bilharzienne." 11 (1), 137-140.
- b. PAYET, M., PÈNE, P. & CAMAIN, R., 1954.—"Les néphrites bilharziennes." 11 (1), 141-143.

### 600—Bulletins et Mémoires de l'École Préparatoire de Médecine et de Pharmacie de Dakar.

- a. PAYET, M., PÈNE, P. & CAMAIN, R., 1954.—"Considérations sur la bilharziose à *Schistosoma haematobium* dans la région de Dakar, à propos de 70 observations." 2, 23-35. [English, Spanish & Portuguese summaries pp. 34-35.]

(600a) A description is given of 70 cases of *Schistosoma haematobium* infection from the region of Dakar, Senegal. The clinical picture was much the same as described in other places, but the authors dwell at some length on the unusual symptoms caused by eggs and flukes in viscera other than the bladder. D.L.H.R.

**601—Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.**

a. CATTAN, R., FRUMUSAN, P., CHENDEROVITCH, Y. & LIBESKIND, M., 1954.—“Anguillulose intestinale. Syndrome de Loeffler. Hématuries.” 4e Série, **70** (30/31), 1199-1206. [Discussion p. 1206.]

(601a) Cattan and his colleagues describe a case of strongyloidiasis in France in which there were recurrent serious pulmonary manifestations and haematuria. Treatment with notezine had only a temporary effect and did not prevent a relapse: anthiomaline appeared to have more effect but this was not lasting. The lesions in the bladder resembled those caused by schistosomiasis but there was no evidence of this infection and the patient had never left France. In the discussion Ravina asked about the action of antibiotics on intestinal parasites and Cattan replied that although they had some use against protozoa and *Enterobius* they were not effective against *Strongyloides*.

S.W.

**602—Bulletin of the New York Academy of Medicine.**

a. GOULD, S. E., 1954.—“The eye and orbit in trichinosis.” **30** (9), 726. [Discussion pp. 726-729.]

(602a) In rats which died two days after being fed on heavy doses of trichina larvae the extreme dehydration, due to diarrhoea, dried up the conjunctival sac secretions and precipitated those of the lachrymal glands. In rabbits, oedema of the eyelids and conjunctivae was frequently accompanied by inflammation, which also occurred in the extra-ocular muscles, connective tissues and choroid. The skin test was of little value except in recent cases. A negative complement fixation test and a flocculation test, taken immediately after an infection is suspected, if followed later by positive results, is very suggestive of trichinosis. R.T.L.

**603—Bulletin de la Société de Chimie Biologique.**

a. CAVIER, R. & SAVEL, J., 1954.—“L’uréogénèse chez l’ascaris du porc (*Ascaris lumbricoides* Linné, 1758).” **36** (10), 1425-1431.  
 b. CAVIER, R. & SAVEL, J., 1954.—“Contribution à l’étude de l’azote aminé chez l’ascaris du porc (*Ascaris lumbricoides* Linné, 1758).” **36** (10), 1433-1438.  
 c. CAVIER, R. & SAVEL, J., 1954.—“Étude de quelques aspects du métabolisme intermédiaire des acides aminés chez l’ascaris du porc (*Ascaris lumbricoides* Linné, 1758).” **36** (11/12), 1631-1639.

(603a) Cavier & Savel have demonstrated that in *Ascaris lumbricoides* there is a ureagenetic cycle such as that described by Krebs & Henseleit in the higher vertebrates. Arginase activity is most marked at the level of the intestine. Purine bases, except guanine, are broken down to ammonia but this activity is much reduced in adult Ascaris. Glutamine serves to transport ammonia in a non-toxic form. Six tables illustrate the paper.

S.W.

(603b) Amino-acids represent about 35% of the non-protein nitrogen in the perivisceral fluid of *Ascaris lumbricoides*; 16 were identified by chromatographic separation. Quantitatively hexone bases and dicarboxylic amino-acids predominate while thio-amino-acids are present only in very small proportions.

S.W.

(603c) In *Ascaris lumbricoides* the intermediate amino-acid metabolism takes place in the same three ways as in the higher vertebrates, namely, oxidative deamination, transamination and decarboxylation. The most active deamination occurs in the intestine. Transaminase activity is most highly developed in the intestine and genital tract. Decarboxylation of histidine, lysine and ornithine results in the formation of histamine, cadaverine and putrescine respectively and these probably play some part in the development of unexpected symptoms in ascariasis.

S.W.

**604—Bulletin de la Société de Pathologie Exotique.**

- a. DESCHIENS, R. & LAMY, L., 1954.—“Action prédatrice des écrevisses des genres *Astacus* et *Cambarus* sur les mollusques vecteurs des bilharzioses.” **47** (6), 809-812.
- b. MONTESTRUC, E. & BERDONNEAU, R., 1954.—“Étude du test de Thorn sur quelques eosinophilies massives.” **47** (6), 812-817.
- c. BRUMPT, L. C. & SANG, H. T., 1954.—“Traitement de l'ascariose et de l'oxyurose par les dérivés de la pipérazine.” **47** (6), 817-822.
- d. HARANT, H., CASTEL, P. & GRAS, G., 1954.—“Traitement de l'oxyurose par la tétracycline.” **47** (6), 822-825.
- e. DOLLFUS, R. P., 1954.—“Variété apparemment génotypique de *Concinnum brumpti* (A. Railliet, A. Henry, Ch. Joyeux 1912) chez un chimpanzé.” **47** (6), 826-833.
- f. BRYGOO, E. R. & QUESNEL, J. J., 1954.—“Microfilarie sanguinicole chez *Corvus albus* à Madagascar.” **47** (6), 833-835.
- g. DESCHIENS, R., 1954.—“Incidence de la minéralisation de l'eau sur les mollusques vecteurs des bilharzioses. Conséquences pratiques.” **47** (6), 915-929.

(604a) Suspecting from previous experiments that crustaceans prey on schistosome intermediaries, Deschiens & Lamy placed in an aquarium two female *Astacus leptodactylus*, 15 cm. long, with four specimens of *Planorbis glabratus* and four *P. adowensis*. After three days all the snails had been eaten. A male *Cambarus affinis*, 12 cm. long, was introduced into a second aquarium containing two *P. glabratus* and two *Bulinus contortus* and consumed them in four days. In a third aquarium a female *Cambarus*, 10 cm. long, ate in two days the two *Physopsis africana* and two *Planorbis adowensis* present. The authors envisage the use of such crustaceans for mollusc control.

M.MCK.

(604b) To ascertain if there exists an eosinophilia apart from that due to recognized causes, the Thorn test was applied to 21 cases presenting an eosinophilia of over 25%. The faeces were examined microscopically and by animal charcoal culture and the blood was searched in suspected cases for diurnal and nocturnal microfilariae. The patients all carried helminths. They were given anthelmintic treatment as far as possible and the eosinophil curve was ascertained by Thorn's test at regular intervals. A fall in eosinophilia was observed in every case, the figure varying between 8% and 65%.

M.MCK.

(604c) Piperazine diphenylacetate, in glutinised granules especially adapted for the treatment of enterobiasis, was given at the rate of 0.075 gm. per kg. body-weight per day for two days and cured 13 out of 16 cases of ascariasis; piperazine hydrate in solution or syrup at the same rate cured 78 out of 80 cases. In enterobiasis the treatment at the same dosage was undeniably efficient but the percentage of cures is not recorded.

M.MCK.

(604d) It took an average of 3 hours 25 minutes for a 3:1,000 solution of tetracyclin, which belongs to the same group of antibiotics as aureomycin and terramycin, to kill *Rhabditis macrocerca* in coproculture. In 8 out of 10 mice rectal doses of 1 c.c. of the solution given for eight days eliminated *Syphacia obvelata* and *Aspiculuris tetraptera*. Three patients unaffected by previous treatments with gentian violet, Nematolyt, piperazine derivatives, bismuth carbonate and other drugs were cured of enterobiasis by the administration of 0.5 gm. or 1 gm. of tetracyclin according to age, per day for 15 days. No toxic effects were observed.

M.MCK.

(604e) In *Concinnum brumpti* var. *megalorchis* n.var., from the chimpanzee *Pan troglodytes* in the French Congo, the oral sucker is equal to or bigger than the acetabulum and the testes are larger and closer together than in the original *C. brumpti*.

M.MCK.

(604f) An unsheathed microfilaria  $115\mu$  to  $170\mu$  in length was present in large numbers in the blood of three crows (*Corvus albus*) in Madagascar; it is illustrated in two photomicrographs. Adults were not found at autopsy.

M.MCK.

(604g) To study the relation between the distribution of schistosome vectors and the chemical constitution of the water in which they live, Deschiens tested separate aqueous solutions of 16 chemicals (carbon dioxide, ammonia, hydrogen sulphide and inorganic salts found frequently in natural waters) on *Planorbis glabratus* and *Bulinus contortus*. Sodium chloride

was tolerated in the highest concentration of all, viz., 6 gm. per litre by *P. glaberratus*. Sodium and potassium nitrites in 1:1,000 solutions killed *P. glaberratus* in 24 hours and *B. contortus* in two days. The fish *Carassius auratus* usually withstood high salt concentrations better than did the molluscs but died sooner under low oxygen tensions. Natural waters from 19 localities were analysed and tested. Some contained copper, iron or arsenic compounds. Those with an oxygen concentration of more than 2 gm. per litre, with 9.28 gm. per litre of sodium chloride or 6 gm. per litre of sodium bicarbonate were lethal to the molluscs. The presence of planorbids and *B. contortus* in schistosome-infected regions of Africa, as ascertained by other workers, is correlated in tabular form to the chemical constitution of the waters.

M.MCK.

### 605—Bulletin de la Société des Sciences Vétérinaires et de Médecine Comparée de Lyon.

- a. EYRAUD, L., 1954.—“Intoxication d'un cheval par la phénothiazine administrée à la sonde naso-oesophagienne.” **56**, 17-19. [Discussion pp. 19-20.]
- b. HELLEU, C., 1954.—“Les ascardioses animales et leur traitement.” **56**, 43-50.
- c. DELPLA, R., 1954.—“Accidents épileptiformes causés par les helminthiases chez le porcelet. Leur traitement causal par la stronglamine.” **56**, 65-67. [Discussion p. 67.]
- d. ROMAN, E., 1954.—“Rôle des animaux domestiques et commensaux dans la transmission de quelques parasites intestinaux fréquents chez l'homme.” **56**, 77-89.
- e. BRIZARD, A. & EUZÉBY, J., 1954.—“Le parasitisme chez les jeunes animaux.” **56**, 91-130.
- f. PERROTEL, P., 1954.—“Au sujet de l'efficacité de la phénothiazine.” **56**, 149-150.

(605a) Eyraud reports that severe toxic symptoms developed in a mare following the administration of an aqueous suspension of 45 gm. of phenothiazine by nasal-oesophageal sound. Treatment with penicillin reduced the abnormally high temperature and injections of serum with added glucose and of haematopoietic substances completed the cure. In the discussion it is suggested that 45 gm. is too large a dose for administration to horses and the advantages and disadvantages of giving phenothiazine in small daily doses are mentioned.

S.W.

(605b) In the first part of this paper Helleu lists and describes very briefly the ascarid species which parasitize domestic animals and poultry. The second part is an annotated list of the anthelmintics commonly used against ascarids together with the usual doses of each for cattle, sheep, pigs, poultry, etc. He concludes that piperazine is the most effective and the least toxic.

S.W.

(605c) Nematodes in young pigs are quite frequently the cause of epileptiform attacks. Delpla reports that he has treated a number of cases very successfully with injections of 10 c.c. of Stronglamine. The dose rate quoted in the discussion is 5 cg. per kg. live-weight.

S.W.

(605d) In this review, Roman discusses the evidence for the transmission of a number of intestinal parasites from domestic animals to man. The helminths mentioned are *Hymenolepis nana*, *Diphyllobothrium latum*, *Ascaris lumbricoides*, *Strongyloides stercoralis*, *Trichuris trichiura* and *Trichinella spiralis*. He concludes that *H. nana* from murines only very rarely infects children, that dogs, cats and, to a lesser extent, pigs may act as reservoirs of *D. latum*, that dogs, cats, rodents and pigs are reservoirs of *T. spiralis*, that *A. lumbricoides* of man and of pig are distinct and show strict host specificity, that *S. stercoralis* is transmitted from man to dog far more frequently than vice versa and that the position regarding *Trichuris trichiura* is still not altogether clear.

S.W.

(605e) In this extensive review of parasitism in young animals, Brizard & Euzéby include arthropods, microsporidia, protozoa and helminths of medical and veterinary importance. The paper is divided into three main parts. The first, which deals with the influence of youth on susceptibility to parasitism, includes a section on those parasitic diseases which are essentially diseases of young animals, e.g. ascariasis, syngamiasis, parasitic bronchitis, dermatitis caused

by Rhabditis, etc. and on the extrinsic and intrinsic factors which cause young animals to be more susceptible, e.g. lack of thickening in the skin making it more easily penetrated by hook-worm larvae, schistosome cercariae etc., lack of inflammatory reactions, prenatal infection, nutritional deficiencies, development of immunity, etc. The second part is devoted to the influence of youth on the aspect of parasitism, and the biology of the parasites and the course of parasitic diseases are discussed. The third part outlines measures, both prophylactic and therapeutic, for controlling parasitic diseases by avoiding prenatal infection and infections acquired by offspring from their dams at an early age and by increasing the resistance of the young animals by immunization and the provision of a well balanced and adequate diet. S.W.

(605f) Perrotel considers that phenothiazine is not only dangerous but is ineffective against ascarids and strongyles in horses. On a stud where colts weighing under 150 kg. were dosed each month with 5 gm. of phenothiazine on four consecutive days, the post-mortem examination of a colt which died revealed an intense infection although it had been dosed only a fortnight before.

S.W.

## 606—California Medicine.

a. SADUSK, Jr., J. F., 1954.—“Cortisone in treatment of trichinosis.” **81** (5), 348–351.

(606a) Cortisone proved most effective in ameliorating the symptoms in a case of trichinellosis. A dose of 200 mg. was given daily in the early and clinically active stage and was continued to the fourth or fifth week, in diminishing doses, down to 50 mg. per day.

R.T.L.

## 607—Ceylon Veterinary Services’ Reporter.

- a. SINNIAH, S. A., 1954.—“Ascaris infestations in buffalo calves.” **2** (1), 20–21.
- b. PERUMAL PILLAI, C., 1954.—“‘Kumri’ in horses.” **2** (2), 76–77.
- c. BALASUBRAMANIAM, N., 1954.—“Helminthiasis in goats in Puttalam District. (A description of two outbreaks).” **2** (2), 91–95.
- d. PERUMAL PILLAI, C., 1954.—“Control of kidney worm (stephanurosis renum) of swine.” **2** (3), 145–149.
- e. SHANMUGALINGAM, K. & SENEVIRATNE, P., 1954.—“A note on the preliminary investigations into the incidence of parasitism in buffaloes in the dry zone.” **2** (3), 151–156.
- f. SENEVIRATNE, P., 1954.—“Helminth infestations of some domesticated animals in Ceylon.” **2** (3), 161–166.

(607a) Sinniah states that infection with roundworms very early in life has been the frequent cause of mortality in buffalo calves and is responsible for the low rate of increase in the buffalo population in Ceylon. Calves have developed clinical symptoms of ascaris infection as early as 14 days after birth, indicating that prenatal infection is common. The life-cycle, pathogenicity, and symptoms, treatment and prophylaxis are briefly outlined.

R.T.L.

(607b) Perumal Pillai briefly summarizes recent published work on epidemic neuro-paralysis of domestic animals. Kumri in horses is similar to the paralysis affecting goats imported into Ceylon from India and Australia. Only one of three recent cases responded to treatment with caricide. Preliminary reports by Innes on the pathological changes in the brain and spinal cord of two horses state that they are identical with those in goat paralysis.

R.T.L.

(607c) Two serious outbreaks of parasitic gastro-enteritis in goats in the Puttalam district of Ceylon in 1953 are reported. Deaths generally occurred during the dry season and were linked with the lack of sufficient green fodder and poor intake of minerals. Close stump grazing resulted in an increase in larval intake. Even half the minimum recommended dose of hexachlorethane proved toxic to local goats.

R.T.L.

(607d) As *Stephanurus dentatus* appears to be common in pigs in Ceylon, a short account is given of the method of examination of the urine for ova, of the mode and routes of infection and of preventive measures.

R.T.L.

(607e) In spite of treatment with phenothiazine a large number of buffaloes have died at the government farm, Ridiyagama, Ceylon. The incidence of *Haemonchus contortus* and *Mecistocirrus digitatus* reached its peak in those between three and twelve months old, and then gradually declined. *Strongyloides papillosus* was predominantly heavy at ten days to eight months of age. Adult animals were more or less free from gastro-intestinal helminths. *Paramphistomum cervi*, *Cotylophoron cotylophorum* and *Gigantocotyle explanatum* were not uncommonly found at post-mortems on buffaloes in the dry zone of Ceylon. The high mortality was chiefly due to coccidiosis.

R.T.L.

(607f) Seneviratne briefly annotates the common and more important helminth infections which have been reported in domesticated animals in Ceylon.

R.T.L.

## 608—Chinese Medical Journal.

a. CHUNG, H. L. & HOU, T. C., 1954.—“Chemotherapy of paragonimiasis. Further observations on the efficacy of chloroquine.” **72** (6), 407–427.

(608a) Chloroquine is a new and apparently specific drug for the treatment of human paragonimiasis, seven cases of which were cured. All of them had received emetine prior to admission to hospital. The dosage was 0·25 gm. twice daily in young children up to 0·5 gm. twice daily in adults, given over a period of 93 to 231 days ; the amount of chloroquine required varied from 26·84 gm. to 85·75 gm. according to the patient's weight and age. The effects of the drug on the daily output of *Paragonimus* eggs and on the blood picture are tabulated. Emetine treatment alone had brought about marked symptomatic improvement, but was followed by early relapse of the symptoms and a reappearance of the eggs in the sputum. R.T.L.

## 609—Ciencia. Mexico.

a. KHERA, S., 1954.—“*Paragendria baylisi* nov. sp., from the intestine of the fish, *Mystus seenghala* (Sykes).” **14** (11/12), 257–258. [Spanish summary p. 258.]  
 b. BAYONA-GONZÁLEZ, A., 1954.—“Tubo plástico en técnicas de flotación para investigar parásitos intestinales.” **14** (11/12), 265–268. [English summary p. 268.]

(609a) *Paragendria baylisi* n.sp., from the fish *Mystus seenghala* purchased in the fish market at Lucknow, measures 9 mm. to 14·2 mm. It possesses a striated cuticle and the lateral alae extend from the anterior end almost as far as the anterior third of the worm. The length of the female tail is 0·3 mm. to 0·346 mm., caudal alae are absent in the male and the spicules are equal and curved, measuring 0·093 mm. to 0·12 mm. The proximal half of each spicule is broad and carries four ridges. These characters differentiate the new species from *P. macronis*.

M.MCK.

(609b) Bayona-González describes the use of two types of flexible plastic tube in the Faust faecal flotation technique. When the tube containing the suspension of ova is pressed the film which contains the ova is brought above the mouth as a meniscus which can be collected on a slide. The new method was compared with the use of a loop to remove the film and showed a much higher egg count. The author also tested a glass tube fitted at the bottom with a rubber plunger which, on being pressed, raised the meniscus. It worked well but was discarded in favour of the simpler plastic tube. The disadvantages of the cellulose acetate tube, which gave better results than did the polythene tube, include its susceptibility to heat and to softening on prolonged contact with water, but these could be overcome by the manufacture of a more suitable plastic.

M.MCK.

## 610—Circular. Florida Agricultural Experiment Station.

a. SWANSON, L. E., DENNIS, W. R. & STONE, Jr., W. M., 1954.—“Internal parasites of cattle. Their control with phenothiazine and management.” No. S-78, 10 pp.

**611—Citrus Industry.**

- a. DuCHARME, E. P., 1954.—“Cause and nature of spreading decline of citrus.” *35* (11), 6-7, 18; (*12*), 5-7.
- b. BROOKS, T. L., 1954.—“Host range of the burrowing nematode internationally and in Florida.” *35* (12), 7-8, 14-15.

(611a) Spreading decline was known in Florida before 1930 but its cause, *Radopholus similis*, was only discovered in 1953. Trees are stunted, with small leaves, poor foliage, growth, and yields, and extensive feeder root damage below 20 inches. An account is given of the various researches undertaken before the cause was finally shown to be *R. similis*. This burrowing nematode lives and reproduces within root cavities; as the food available is used the nematodes migrate to fresh roots. Nematodes have been found in decline areas two or three rows of apparently healthy trees beyond the affected ones, equivalent to one or two years before symptoms of decline appear. *R. similis* was extracted from roots by placing washed roots in closed jars and incubating them for a few days, then washing with a small quantity of water when the nematodes were found in the water. Other nematodes found during the course of the investigations but not associated with spreading declines were *Tylenchulus semipenetrans*, *Belonolaimus gracilis*, *Pratylenchus pratensis*, *Hoplolaimus coronatus*, *Aphelenchus avenae*, *Criconemoides citri*, *Xiphinema americanum*, *Rotylenchus* sp., *Hexatylus* sp. and *Aphelenchooides* sp.

J.B.G.

(611b) After citing the known hosts of *Radopholus similis* the results are given of an examination of ornamental and other plants, particularly tropical and subtropical species, from nurseries and areas adjacent to citrus groves suffering from slow decline. *R. similis* was found associated with roots of a number of new hosts by the incubation method and was confirmed by dissection. These plants are *Acanthus* sp., *Allamanda nerifolia*, *A. williamsii*, *Callicarpa americana*, *Capsicum frutescens*, *Cestrum nocturnum*, *Chrysophyllum cainito*, *Coccularia* sp., *Hedychium coronarium*, *Ixora coccinea*, *Jacobinia* sp., *Philodendron* sp. and *Pothos aureus*. A number of other plants with whose roots *R. similis* was also associated are considered possible hosts. Some plants may be attacked by *R. similis* but show no symptoms.

J.B.G.

**612—Clinica Veterinaria. Milan.**

- a. LANDI, A. & MONZINI, A., 1954.—“Osservazioni sul comportamento e sulla vitalità del *Cysticercus bovis* e del *Cysticercus cellulosae* alle basse temperature.” *77* (9), 264-268. [English summary p. 267.]
- b. SCOLARI, C. & MONZINI, A., 1954.—“Osservazioni sulla vitalità e sul comportamento del pleroceco alle basse temperature.” *77* (9), 269-273. [English summary pp. 272-273.]

(612a) The minimum freezing time required to kill cysts of *Cysticercus bovis* in slices of meat 3-4 cm. thick and 100-200 gm. in weight was 9 hours at -15°C., 8 hours at -20°C., 7 hours at -25°C. and 4 hours at -40°C. It is estimated that, in this range of temperature, a reduction of 1°C. shortens the minimum freezing time by about 12 minutes. Landi & Monzini review the results of other workers on the freezing of *C. bovis* and *C. cellulosae*.

M.MCK.

(612b) Plerocercoids of *Diphyllobothrium latum* in *Perca fluviatilis* were killed by freezing the fish for 72 hours at -5°C., 12 hours [18 hrs. in summary] at -10°C., 8 hours at -15°C., 7 hours at -20° or -25°C. and 3 hours at -40°C. The larvae were still alive after being maintained at 0°C. for 20 days. As a control measure in Italy, freezing is recommended at -5°, -10° or -15°C.

M.MCK.

**613—Comptes Rendus des Séances de la Société de Biologie. Paris.**

- a. MANSARD, M., 1954.—“Inclusions cytoplasmiques ovulaires chez quelques nématodes parasites de vertébrés.” *148* (23/24), 2014-2017.

(613a) *Parascaris equorum* is the only nematode in which the oocyte has been much studied for inclusions. The globular inclusions in the oocytes of *Ascaris lumbricoides* from the pig, *Polydeltphis anoura*, *Toxocara mystax*, *Hexametra* sp. and *Heterakis gallinae* are hyaline,

protein in character and as in *P. equorum* are lightly tinged *in vivo* by nile blue and deeply stained after fixation by the methylene blue of Mallory's stain. In *Subulura distans* and *S. dispar* the globules are somewhat opaque. In each case they are associated with the production of the middle of the three surrounding membranes formed at fertilization. The middle membrane, except in the species of *Subulura*, is chitinous. The inner one is lipid, birefringent, impermeable and devoid of the ascarylic acid found in the inner layer of the *P. equorum* oocyte.

M.MCK.

**614—Comunicaciones del Instituto Nacional de Investigación de las Ciencias Naturales y Museo Argentino de Ciencias Naturales "Bernardino Rivadavia". Buenos Aires. Ciencias Zoológicas.**

- a. SZIDAT, L. & SORIA, M. F., 1954.—“Cestodes y sus larvas nuevos parásitos de *Leptodactylus ocellatus* (L.) (Amphibia, Leptodactylidae) de la República Argentina.” **2** (13), 189–210. [English, French & German summaries pp. 207–210.]

(614a) A large and apparently new plerocercoid was found encysted in large numbers on the liver of the frog *Leptodactylus ocellatus* collected near Buenos Aires. It measured 2–3 cm. and was identified as a larva of *Ophiotaenia* by the presence on the more developed specimens of four suckers and a glandular rostellar organ. The less developed specimens apparently agreed with Vogelsang's description (1926) of *Sparganum leptodactyli* from the same host and country, which larvae were probably erroneously identified. The cysts usually had one fully developed larva each. The only traces of juveniles were the paths in the liver, spleen and other organs which recalled those of young *Fasciola hepatica*. *Ophiotaenia bonariensis* n.sp., found in the same specimens of *L. ocellatus*, differs from other species of *Ophiotaenia* from South American amphibians in the diameter of the scolex, which is half that of *O. noei* and *O. filarioides*, a quarter that of *O. ceratophryos* and much smaller than that of the larva described above. Each proglottis has 23–27 uterine sacs on each side. The eggs measure 0·072 mm. across the external membrane. The 1949 edition of Brumpt's “Précis de Parasitologie” states erroneously that Wolffhügel & Vogelsang obtained the adult of *Diphyllobothrium decipiens* in a dog by infection with a *Sparganum* from *Leptodactylus ocellatus*. The larva actually used was *S. reptans* from South American marsupials.

M.MCK.

**615—Dansk Landbrug.**

- a. PETERSEN, W. W., 1954.—“Svinets trikinsygdom.” **73**, 122–123.

(615a) The symptoms of trichinelliiasis in swine and in man are described. The importance of inspecting pork for trichinelliasis in a country with extremely few cases of the disease is stressed.

S.B.

**616—Deutsche Pelztierzüchter (Der).**

- a. SEIDEL, E., 1954.—“Einiges über neue Parasitenfunde beim Sumpfbiber.” **28** (11), 190–191.

(616a) Seidel reports for the first time *Capillaria hepatica* eggs in the ducts of the liver of swamp-beavers on a breeding farm near Leipzig. No adults or larvae were found. There were also unidentified (probably trichostrongylid) eggs, which resembled those of *Molineus americanus*, in the faeces.

G.I.P.

**617—Dissertation Abstracts.**

- a. KENNEDY, P. C., 1954.—“Pathology of *Ascaris lumbricoides* and *Trichinella spiralis* infection in cattle.” **14** (II), 2041.
- b. ROWAN, W. B., 1954.—“The life cycle and epizootiology of the rabbit trematode, *Hassilesia tricolor* (Stiles and Hassall, 1894) Hall, 1916. (Trematoda: Brachylaemidae).” **14** (II), 2167.

(617a) This is an abstract of a thesis [so far published only in microfilm]. The thesis describes the results of experimental infections of calves with embryonated eggs of *Ascaris lumbricoides* var. *suum*. The migration of the larvae caused multiple microscopical foci of

necrosis in the liver and petechial haemorrhages in the lung but no changes in the total or differential leucocyte count, or in the temperature. Repeated infections gave rise to gross focal infiltrations with eosinophils in the liver and lung, rise of temperature, mild respiratory symptoms and, in one case, eosinophilia. No sensitivity was observed in calves receiving serum from a calf repeatedly subjected to larval migrations. When adult cattle were used an eosinophilia followed the administration of embryonated eggs. In experimental infections with *Trichinella spiralis* made on two bulls and a calf, eosinophilic myositis developed but larval invasion of the muscles ceased in about 25 days. The encysted larvae proved infective when fed to rats about 42 days after the initial infection.

R.T.L.

(617b) [A fuller account of this thesis is published in *Trans. Amer. micr. Soc.*, 1955, 74, 1-21. For abstract see Helm. Abs., 24, No. 46a.]

### 618—Documenta de Medicina Geographica et Tropica. Amsterdam.

a. ABDULRACHMAN, S. & LIE KIAN JOE, 1954.—“Morphological differences between *Ascaris* from man and pigs.” **6** (4), 342-344.

(618a) Although the denticles on the lips of *Ascaris lumbricoides* and *A. suilla* are not identical the distinction between them is not always sharply defined. Of 50 worms from man the denticles of one could not be distinguished from those of worms from pigs and the differences in three were ill defined. Of 43 worms from pigs one had denticles indistinguishable from those in worms from man, and in 7 the differences were not marked. Nevertheless the differences in the denticles support Sprent’s opinion that *A. lumbricoides* of man and the pig are specifically distinct.

R.T.L.

### 619—Dokladi Akademii Nauk SSSR.

a. LOGACHEV, E. D., 1954.—[Development of dorso-ventral contractile fibres in cestodes.] **95** (6), 1363-1366. [In Russian.]  
 b. RIZHIKOV, K. M. & DIZER, Y. B., 1954.—[Biology of *Macracanthorhynchus catulinus* and *Mediorhynchus micracanthus*.] **95** (6), 1367-1369. [In Russian.]  
 c. GINETSINSKAYA, T. A., 1954.—[Importance of taxis in the life activity of cercariae.] **97** (2), 369-372. [In Russian.]  
 d. KUPRIYANOVA, R. A., 1954.—[Contribution to the biology of the fish nematodes, *Camallanus lacustris* and *C. truncatus* (Nematoda: Spirurida).] **97** (2), 373-376. [In Russian.]  
 e. ERKINA, N. G., 1954.—[The life-cycle of the trematode *Notocotylus chionis*, parasite of aquatic birds.] **97** (3), 559-560. [In Russian.]  
 f. PASKALSKAYA, M. Y., 1954.—[The life-cycle of the trematode *Plagiorchis arcuatus*, parasitic in the oviduct and bursa Fabricii of chickens.] **97** (3), 561-563. [In Russian.]  
 g. CHUBRIK, G. K., 1954.—[The life-cycle of the trematode *Parapronocephalum symmetricum* Belopolskaya, 1952.] **97** (3), 565-567. [In Russian.]  
 h. ZORINA, I. P., 1954.—[Some observations on the biology of *Cercaria secunda* and *C. pseudar mata*.] **97** (4), 749-751. [In Russian.]  
 i. AKHMEROV, A. H., 1954.—[A new species of *Dactylogyrus* from the gills of the Amur fish *Hypophthalmichthys molitrix* (Wallenc.).] **98** (1), 167-168. [In Russian.]  
 j. KUROCHKIN, Y. V., 1954.—[Biological cycle of the nematode causing epomidiostomiasis in ducks.] **98** (3), 509-511. [In Russian.]  
 k. LOGACHEV, E. D., 1954.—[Structure and histogenesis of yolk glands in the broad tape-worm.] **99** (1), 181-184. [In Russian.]

(619b) Two kinds of acanthocephalan larvae found in the beetle *Adesmia gebleri* from the Kara Kum region are described and figured. The cysts of *Mediorhynchus micracanthus* are 1.53 mm.  $\times$  0.72 mm. The larva is 2.48-2.59 mm. long with a proboscis 0.55-0.67 mm. long. The proboscis carries 24 to 28 longitudinal rows of hooks on the terminal portion and of spines on the basal part. The hooks vary in size from 0.065 mm. at the apex to 0.038 mm. towards the base. The encysted larvae of *Macracanthorhynchus catulinus* are 6.32 mm. long and have a proboscis 0.57 mm. long with 12 longitudinal rows of three hooks each. The size of the hooks varies from 0.25 mm. to 0.11 mm. The authors disagree with Dubinin (1948) that small vertebrates, e.g. the badger, weasel and others, are the second intermediate hosts of *M. catulinus* and consider them to be reservoir hosts.

G.I.P.

(619c) Ginetsinskaya describes a stylet cercaria named *Cercaria maritrematis* from the snail *Hydrobia ulvae* collected on two islands off Kandalaksha in the White Sea. Of the various littoral invertebrates she was only able to infect *Gammarus lacustris*, in which the cercariae encysted after 12 days. The metacercariae were identified as *Maritrema*. The free-swimming period of the cercaria was 8 to 10 hours. 300–500 cercariae left the snail daily, the majority emerging over a three to four-hour period at the warmest time of the day (about 12 to 2 o'clock in the laboratory). This characteristic leads to a mass emergence of cercariae in small warm pools at low tide, where snails and *Gammarus* are in close proximity. The positive geotaxis and negative phototaxis of the cercariae (demonstrated experimentally) direct them to the pool crevices and bottom, where the *Gammarus* are found.

G.I.P.

(619d) *Mesocyclops leuckarti*, *Acanthocyclops viridis* and *Cyclops strenuus* were experimentally infected with juveniles of *Camallanus lacustris* and *C. truncatus*. At 19–21°C. the first moult took place after 24–48 hours, the larvae resembling the original juveniles. At the second moult after five to six days, the buccal capsule, the muscular and glandular pharynx and the intestine had differentiated. The larvae of *C. lacustris* measured 0·496–0·52 mm. and those of *C. truncatus* 0·478–0·489 mm. At 7–9°C. development lasted twice as long and the free juveniles remained viable for 11–12 hours. As second intermediaries, small *Leuciscus idus*, *L. leuciscus* and *Abramis brama* were successfully infected. The tridents appeared after development for 20 to 25 days in the final host, *Perca fluviatilis*. Larvae were also able to develop when infected cyclops were swallowed by young *P. fluviatilis*, i.e. via one intermediate host. It is therefore thought possible that the second intermediary is a reservoir host.

G.I.P.

(619e) The eggs of *Notocotylus chionis*, in the faeces of ducks and geese, are embryonated and measure 0·02–0·023 × 0·012–0·015 mm. with polar filaments 0·225–0·315 mm. long. They become attached to the bottom of ponds by one filament in the ground and can remain unchanged for a few months. On farms in the Kaluga district, near Moscow, the vectors are *Bithynia leachi* and more rarely *B. tentaculata*. When the eggs are eaten by the snail the miracidia hatch and give rise to orange rediae 0·45–1·45 mm. long. Mature cercariae have three pigment spots and are 0·225–0·355 mm. long, with a tail 0·18–0·45 mm. long. They leave the snail in morning light and swim freely for periods varying from a few minutes to five hours before encysting on the bottom of the pond. The adolescariae are 0·195–0·225 mm. in diameter, have five membranes and are infective from the first day of their formation. The prepatent period in ducks was 30 days.

G.I.P.

(619f) At 20–25°C. the eggs of *Plagiorchis arcuatus* developed to the miracidium in 15 to 17 days and the cercaria in 18 days. Three snail species existing in the plagiorchiasis region were tried as intermediaries and four out of 50 *Bithynia tentaculata* became infected. Numerous insect larvae from the area were dissected and those of *Coenagrion hastulatum* and *Lestes sponsa* were found to contain *P. arcuatus* metacercariae. These were fed to chickens. One out of five became infected and, on autopsy eight days later, contained mature worms.

G.I.P.

(619g) Chubrik describes the rediae, cercariae and metacercariae of *Parapronocephalum symmetricum* found in the gonad and liver of *Littorina saxatilis* (= *rudis*) from the Murman Coast, Gorla, and the Onega and Kandalaksha bays of the White Sea. Metacercariae were also present in the mantle cavity. Cercariae on leaving the rediae, complete their development and encyst in the host tissues. When mature they are 0·55–1·27 mm. long, often with a short tail. The metacercariae are of similar length and have not developed further. The presence of a rudimentary cercarial tail indicates that a free stage had existed in the life-cycle of *P. symmetricum*. An analogous abbreviation of the life-cycle has presumably taken place in *Macrovestibulum obtusicaudum*.

G.I.P.

(619h) Zorina has observed that on the average 11,413 *Cercaria pseudarmata* left their host *Limnaea stagnalis* per night with peak periods at nine and one o'clock, while *C. secunda* left the snail during day time, with a peak period from ten to one o'clock. By keeping a snail

consecutively at 25–30°C., 17–19°C. and then 10–15°C. for two hours in each, the optimum temperature for both species was shown to be 25–30°C. *C. pseudarmata* was positively and *C. secunda* negatively geotactic and both showed negative phototaxis. Of the various aquatic insects tested as second intermediaries, *C. secunda* infected the larvae of *Culex* and *Ilybius* and *C. pseudarmata* the larvae of Tendipedidae (Chironomidae) and to a lesser extent those of *Corethra*.

G.I.P.

(619i) *Dactylogyrus skrabini* n.sp., found between the spongy lamellae of the gills of *Hypophthalmichthys molitrix* from the Amur river basin, is 2–2·4 mm. long and 0·25–0·3 mm. broad and is the largest species in the genus. The haptor anchors are 0·072–0·084 mm. [?0·072–0·084 mm.] long. The curved outer process is 0·04–0·055 mm. long and is continuous with the base; the inner process is 0·012–0·018 mm. long and at an angle of 65° to 70° to the hook. Six pairs of hooklets, from 0·03 to 0·06 mm. in length, lie above, while the seventh, 0·065–0·08 mm. long, lies below the anchors. The chitinous copulatory organ consists of a straight tube, 0·08–0·085 mm. long, lying parallel to a supporting plate 0·12–0·16 mm. long. Eyes are not well developed. *D. skrabini* is resistant to 5% sodium chloride. G.I.P.

(619j) *Epomidiostomum anatinum* eggs, passing with the faeces of wild ducks, were oval, 0·044–0·06 mm. × 0·072–0·08 mm. in size and in the primary stages of division. At their optimum temperature of 23–25°C. the eggs hatched in three days. The larva moulted within the egg and on hatching was 0·38–0·45 mm. long, with pointed ends and a thin cuticle. The eggs and larvae were not resistant to drying. After three to six days of active swimming, the larvae shed the cuticle and, under experimental conditions, were viable up to 20 days. When three domestic ducks were exposed to infection with freshly hatched larvae no infection occurred, but when four to five-day-old larvae which had shed the cuticle were used, two out of four ducks became infected. In an experimental study of the life-cycle of *Amidostomum boschadis* it was found that the type and periods of its development agreed with that of *E. anatinum*.

G.I.P.

(619k) Logachev has studied, by staining and serial sectioning, the formation and structure of the yolk glands of *Diphyllobothrium latum*. Basophilic amoebocytes migrate from the subcuticular layer to lie under it where they divide and grow to form the gland. Differentiation into ripe yolk cells involves the formation of vacuoles in the cytoplasmic periphery of the cells and a decrease in cytoplasmic basophilia, while the nucleus becomes compact and stains more deeply and the amount of thymonucleic acid progressively increases. The formed gland contains various cell stages but mainly the ripe yolk cells "secreted" by it. G.I.P.

## 620—East African Medical Journal.

a. JORDAN, P., 1954.—"Filariasis in the Southern Province of Tanganyika." 31 (12), 537–542.

(620a) Village surveys made in the endemic filarial area of the Southern Province of Tanganyika showed great variation in the incidence of *Wuchereria bancrofti* and *Acanthocheilonema perstans*. The tabulated results reveal that in adult males in the Kilwa district *W. bancrofti* reached over 70% and *A. perstans* over 40%. The incidence gradually decreased inland from the coast but continued high along the river valleys. Songea district appeared to be almost free from *W. bancrofti*. It was observed that the high incidence of bancroftian infection was associated with a high temperature combined with a high relative humidity.

R.T.L.

## 621—Ecology.

a. BROWN, Jr., W. L., 1954.—"Collembola feeding upon nematodes." 35 (3), 421.

(621a) An unidentified species of Collembola, which is frequently present in gardens in Melbourne, was observed to ingest living nematodes. The springtail showed no obviously significant orientation towards the nematodes until the antennae were almost within direct contact range.

R.T.L.

**622—Euphytica. Wageningen.**

a. ELLENBY, C., 1954.—“Tuber forming species and varieties of the genus *Solanum* tested for resistance to the potato root eelworm *Heterodera rostochiensis* Wollenweber.” **3** (3), 195–202.

(622a) Ellenby gives a list of the tuber-forming species and varieties of *Solanum* which he has tested for resistance to potato-root eelworm, comprising about 1,300 forms from 60 wild and cultivated species. All come under the heading of non-resistant except the few which he had previously reported as resistant [for abstracts see Helm. Abs., **17**, No. 207a & **21**, No. 463c].

M.T.F.

**623—Experimental Cell Research. New York.**

a. FAURÉ-FRÉMIET, E., EBEL, J. P. & COLAS, J., 1954.—“Les inclusions protéiques de l'ovocyte de *Parascaris equorum*.” **7** (1), 153–168.

(623a) Fauré-Frémiel *et al.* have made an extensive cytochemical and biochemical study of the so-called hyaline spheres which are found in the cytoplasm of the oocytes of *Parascaris equorum*. They have demonstrated that they are not, as previously believed, composed of mineral salts but consist of protein dissolved or dispersed in a solution of mineral salts. The protein is soluble in alcohol at 60°C., water, physiological saline and acids but is insoluble in 10% sodium chloride, 2M sulphocyanide and concentrated alkalis; there is a high proportion of proline. After fertilization the spheres move to the periphery of the ovum, coalesce and disappear in the periovular fluid, suggesting that they are broken down into substances which are used by the developing embryo.

S.W.

**624—Experimental Report of Government Experimental Station for Animal Hygiene, Tokyo.**

a. SASAKI, N. & SANO, K., 1954.—[Studies on the skin microfilariosis of horses. I. Investigations on clinical and haematological findings and histopathology of the skin of affected horses.] No. 28, pp. 261–272. [In Japanese: English summary pp. 271–272.]  
 b. SASAKI, N. & SANO, K., 1954.—[Studies on the skin microfilariosis of horses. II. Investigations on the detection method of the skin microfilariae, its morphology and periodic occurrence.] No. 28, pp. 273–284. [In Japanese: English summary pp. 280–284.]

(624a) A skin infection of horses known as “Kesen” is characterized by the formation of papules, itching, depilation, serous effusion and elephantoid changes. The itching induced secondary dermatitis, which was most prevalent in the summer months and reappeared on the same area every year. The eosinophils increased relatively. Microfilariae were not detected in the blood, but were present in the papillary or reticular layer of the skin in 10 out of the 11 cases studied. When there were many microfilariae in the papillary layers the severity of the itching was increased.

R.T.L.

(624b) A simplified method of detecting microfilariae in the corium in “Kesen” disease of horses consists in excising a piece of the skin lesion, about the size of a soya bean, and soaking it in 0·2 c.c. of physiological saline at 37°C. After one hour the microfilariae can be seen actively moving in a drop of the solution when microscopically examined. The maximum emigration rate is reached after two hours. Very few microfilariae could be found in the blood although examinations were made at three-hourly intervals for 24 hours. From the presence of numerous microfilariae in the skin lesions, their absence from the blood and the seasonal appearance of the lesions it seems probable that the skin microfilariae belong to the genus *Onchocerca*.

R.T.L.

**625—FAO Plant Protection Bulletin. Rome.**

a. BAZÁN DE SEGURA, C. & AGUILAR F., P., 1954.—“Nematodes and root diseases of cotton in Peru.” **3**, 20–21.

(625a) *Meloidogyne incognita* var. *acrita* can cause serious damage to cotton in Peru. In combination with wilt and root rot fungi the damage is often much greater. The selection of resistant strains of cotton is being undertaken.

J.B.G.

**626—Folia Clinica et Biologica. São Paulo.**

a. CAMARGO, H. W. & LIMA, E. C., 1954.—“Ascaridiose do ouvido médio. (Observação a respeito de um caso.)” **21** (4), 201-204.

(626a) Camargo & Lima found an adult Ascaris behind the eardrum in a 19-month-old girl in Brazil. After piercing the drum, removing the worm and applying measures to reduce the exudations from the ear, the patient was discharged and has not returned to the clinic.

M.MCK.

**627—Folia Medica. Naples.**

a. GIROMINI, M., 1954.—“Le condizioni favorevoli alla diffusione dell’anchilostomiasi nell’ambiente agricolo.” **37** (4), 306-312. [French summary p. 312.]  
 b. GIROMINI, M., 1954.—“Evoluzione del concetto di anchilostomiasi come malattia dei lavoratori.” **37** (6), 508-520. [French summary p. 516.]  
 c. GIROMINI, M. & GRANATI, A., 1954.—“Mezzi farmacologici di disinfezione e profilassi dell’anchilostomiasi nei lavoratori agricoli.” **37** (7), 608-621. [French summary p. 620.]  
 d. GIROMINI, M. & GRANATI, A., 1954.—“Studio su 5,048 casi di idatidosi verificatisi in Italia dal 1941 al 1952.” **37** (9), 746-770. [French summary pp. 768-769.]  
 e. SALAMONE, L., 1954.—“Rilievi ematodidollarì e considerazioni sulla patogenesi dell’anemia da anchilostoma.” **37** (10), 837-846. [French summary pp. 845-846.]  
 f. GRANATI, A. & GIROMINI, M., 1954.—“L’idatidosi malattia dei lavoratori agricoli.” **37** (12), 1101-1109. [French summary p. 1109.]

(627a) The conditions which enable hookworm to spread among rural populations are described, with details of its spread in various parts of Italy.

M.MCK.

(627b) In this historical review Giromini illustrates how the concept of hookworm as a disease of miners and kiln workers has changed to that of a disease which affects mainly agricultural populations.

M.MCK.

(627c) Giromini & Granati outline the steps needed to eradicate ancylostomiasis from Italian agricultural populations and review the anthelmintics commonly used against the infection in man.

M.MCK.

(627e) Salamone gives a clinical account of an infection with *Ancylostoma duodenale* in a 13-year-old girl. Bone marrow from the sternum showed definite erythraemia. After therapy with iron the infection was cured by a treatment based on chloroform and chenopodium oil. The daily administration of 150 mg. of powdered duodenal mucosa for 10 days reduced the size of the spleen.

M.MCK.

**628—Gaceta Médica de Caracas.**

a. ARENDS, T., RONDÓN, M. F. & GONZÁLEZ MIJARES, P., 1954.—“Nuevo foco de oncocercosis humana en Venezuela. Comunicación previa.” **62** (11/12), 645-647.

(628a) A new focus of onchocerciasis has been found in the State of Aragua, Venezuela. *Onchocerca volvulus* infections were discovered in a woman and her mother who had been born and lived all their lives in the district of Zamora.

M.MCK.

**629—Georgikon Deltion (Bulletin Agricole). Athens.**

a. PANETSOS, A. G., 1954.—[Contribution of veterinarians in reducing and combatting echinococcosis.] Ser. 3, No. 9, pp. 79-91. [In Greek: English & French summaries p. 91.]

**630—Gunma Journal of Medical Sciences.**

- a. MATSUMURA, T. & ODA, T., 1954.—“Studies on increase of death of Ascaris-eggs in the mixture of feces and urine on protein addition.” [Abstract of paper presented at meeting of the Kitakanto Medical Society, April 20, 1954.] **3** (3), 233–234.
- b. MATSUMURA, T. & OSAWA, M., 1954.—“Experimental studies on Ascaris prevention by chemical disposal of cesspool.” [Abstract of paper presented at meeting of Kitakanto Medical Society, July 27, 1954.] **3** (4), 319–320.

(630a) Ascaris ova in a mixture of faeces and urine were easily killed when protein was added. This was due chiefly to chemical substances produced by the decomposition of the protein. This is thought to be the explanation of the mechanism whereby Ascaris ova are killed in stored faeces and urine.

R.T.L.

**631—Higijena. Belgrade.**

- a. LEPEŠ, T., 1954.—“Prilog poznavanju rasprostranjenosti i lečenja tenijaze kod nas.” **6** (2), 178–185. [English summary p. 185.]

(631a) In Bosnia, Kosmet, Sandzak and Montenegro more than 30% of the cattle are infected with *Cysticercus bovis* and over 15% of the inhabitants have *Taenia saginata*. *Taenia solium* is mostly found in Serbia, Macedonia and Croatia where smoked pork is frequently consumed. Lepeš used N.I.H. and cellophane tape swabs for diagnosis and gave atebrin, 0.02 gm. per kg. body-weight, intraduodenally followed by Epsom salts. In the author's opinion the drug provokes an oedema of the intestinal mucosa which causes the scolex to become detached.

R.T.L.

**632—Hirosaki Medical Journal.**

- a. MARUYAMA, M. & AOYAMA, J., 1954.—[Deposition of bilirubin to eggs of *Ascaris lumbricoides*.] **5** (2), 97–101. [In Japanese: English summary p. \*17.]
- b. ASAKURA, S. & SASAMURA, M., 1954.—[Eggs of *Ascaris lumbricoides* in the wall of the common bile duct.] **5** (2), 102–105. [In Japanese: English summary p. \*18.]
- c. HASHIMOTO, T., 1954.—[The statistic observation of the ‘ascarid invasion in the bile duct’ from the reports in Japan.] **5** (3), 199–211. [In Japanese: English summary pp. \*35–\*36.]
- d. MAKI, T., YASUDA, M., NARUMI, H. & TANAKA, S., 1954.—[Parasitization of *Trichostongylus orientalis*. Report 1. The results on middle-school boys in Tateoka village.] **5** (3), 232–235. [In Japanese: English summary p. \*42.]
- e. NARUMI, H., TANAKA, S., KIKUTI, K. & ICHINOHE, T., 1954.—[Parasitization of *Trichostongylus orientalis*. Report 2. The results on middle-school boys in Fujisaki town.] **5** (3), 236–238. [In Japanese: English summary p. \*43.]

(632a) Deposits of calcium bilirubinate were present on Ascaris eggs, obscuring the fine structure of the shell, in bile from three cases of ascarid invasion of the bile-duct. This suggests that the eggs play an important role in initiating gall-stones.

R.T.L.

(632b) During cholecystectomy on three cases of chronic cholecystitis mucus, lightly scraped from the wall of the bile-duct, was found to contain *Ascaris lumbricoides* eggs. Some had a slight deposit of bilirubin on the surface. This suggests that an egg can remain for a long time in the bile-duct and become a kernel of pigment stone.

R.T.L.

(632c) Between 1899 and 1952 Hashimoto noted 455 Japanese cases of Ascaris invasion of the bile-duct. 219 worms were alive and 79 were dead, 74% were in the common bile-duct and in 80% of the cases a single specimen only was present. Most of these cases were found during operations for cholelithiasis, but recently duodenal tube drainage has been considered helpful. In many of the operations parasite stones caused by dead worms have been found.

R.T.L.

(632d) *Trichostongylus orientalis* ova were found in 92 out of 102 healthy boys and girls at the middle school in Tateoka village, Aomori Prefecture. Examination of the bile obtained by Meltzer Lyon's duodenal drainage method disclosed 95.7% and Fülleborn's

technique for faecal examination 52·2%, while the direct smear method gave only 15·2%. Migration of the parasites into the bile-duct does not cause any symptoms of cholecystitis unless the invasion is severe or a secondary infection supervenes. R.T.L.

(632e) *Trichostrongylus orientalis* ova occurred in 40 out of 68 boys at Fujisaki middle school in Aomori Prefecture, Japan. With Meltzer Lyon's duodenal drainage method 95% were detected in the bile, in large numbers, as compared with 25%-50% in the faeces by Fülleborn's method and 10%-15% by the direct method of examination for ova. R.T.L.

### 633—Hospital, Rio de Janeiro.

- a. LIMA, F. M., 1954.—“ Contribuição ao estudo da enterobiose.” **45** (4), 413-418. [English summary p. 418.]
- b. PERYASSU, A., 1954.—“ Panorama sanitário brasileiro. Conferência feita no XI Congresso de Higiene, realizado em Curitiba, Paraná, em 19 de novembro—15 a 21—de 1953.” **45** (5), 559-574.
- c. LOBO, M. B., MOREIRAS, M., MANCEAU, J. N. & MORAES, N. L. DE A., 1954.—“ Planejamento e execução de um inquérito coprológico.” **45** (5), 575-588.
- d. FIORILLO, A. M., 1954.—“ Estudo eletroforético do sóro de pacientes portadores de esquistosomose mansoni hepato-esplênica.” **45** (5), 647-651. [English summary p. 649.]
- e. AMATO NETO, V. & SCHMIDT, B. J., 1954.—“ Pesquisa de ovos de *Schistosoma mansoni* nas fezes: estudo comparativo entre os métodos de Hoffman, Pons e Janer e de Ferreira e Abreu.” **46** (4), 335-339. [English summary p. 339.]

(633a) As a modification of Hall's technique the cellophane was folded over the end of a spatula and held in place by the fingers instead of being applied on a rod. At Salvador the *Enterobius* incidence in 408 children was 22·1% but in several instances the test was positive only on the second or third examination. M.MCK.

(633b) In an address to the Eleventh Brazilian Congress on Hygiene, at Curitiba, Peryassu refers to 5,953 cases of *Schistosoma mansoni* found in 267,107 liver biopsies in Brazil between 1937 and 1946. He recalls that in an investigation including the 25 Brazilian capitals, eight were found to have autochthonous filarial infection, viz., Manaus, with *Mansonella ozzardi* and *Wuchereria bancrofti*, and Belém, Recife, Maceió, Sergipe, Salvador, Florianópolis and Pôrto Alegre with *W. bancrofti*. M.MCK.

(633c) The incidence of helminth eggs in the faeces of 256 public servants of Rio de Janeiro was *Ascaris lumbricoides* 12·1%, hookworm 5·1%, *Strongyloides stercoralis* 9·4%, *Trichuris trichiura* 22·7%, *Enterobius vermicularis* 0·4%, *Schistosoma mansoni* 1·2% and *Taenia* sp. 0·4%. A statistical method devised to obtain exact data is described. R.T.L.

(633d) Electrophoretic determinations by the Grasmann method were made on ten cases of schistosomiasis mansoni with hepato-splenomegaly. All were low in albumin,  $\beta$  globulin was normal or slightly increased, and  $\gamma$  globulin was always much increased. R.T.L.

(633e) When tested in 100 patients, Ferreira & Abreu's concentration technique was not inferior to that of Hoffman, Pons & Janer in detecting *Schistosoma mansoni* eggs. Both revealed infection in 51 of the patients; in two patients the first method only and in two the second method only were positive. Ferreira & Abreu's technique is rather more laborious and although it distorts the eggs of *S. mansoni*, making their viability difficult to determine, they are always identifiable. M.MCK.

*cerca*

### 634—Igiene e Sanità Pubblica.

- a. MAZZEO, M., 1954.—“ Su di un piano di profilassi antianchilostomiasica nella provincia di Napoli.” **10** (11/12), 620-630. [English, French & German summaries p. 620.]
- b. CHIGNOLI, V. & TRIGGIANI, L., 1954.—“ Sulla diffusione delle parassitosi intestinali in collettività infantili.” **10** (11/12), 693-698. [English, French & German summaries p. 693.]

(634a) Mazzeo discusses the distribution of human hookworm infection in the province of Naples and outlines a plan for its control. M.MCK.

(634b) Chignoli & Triggiani examined the faeces of 812 children in collective homes in Campania, Italy. Ascaris was present in 26.6%, Trichuris in 24.1%, Enterobius in 30.8%, and *Hymenolepis nana* in 12.5%. No hookworm was found.

M.MCK.

### 635—Indian Medical Gazette.

- a. BHADURI, N. V., CHOWDHURY, A. B. & SANYAL, P. K., 1954.—“A study on the anthelmintic action of the cashew-nut shell oil.” *89* (8), 474-476.
- b. KALAPESI, R. M. & RAO, S. R., 1954.—“*Trichinella spiralis* infection in a cat that died in the Zoological Gardens, Bombay.” *89* (10), 578-580.

(635a) Oil from the shell of the cashew nut, *Anacardium occidentale*, was given in doses of 2.5 gm. to 4 gm. to children aged 14 years or less and 5 gm. to 6 gm. to adults. In adults one treatment cured 30 out of 47 with Ascaris, 28 out of 78 with hookworm, one with *Hymenolepis diminuta* and one out of two with *Strongyloides stercoralis*. Two treatments eradicated *Fasciolopsis buski* in one person and *H. nana* in 11 out of 13 people. *Trichuris trichiura* was scarcely affected. The oil was well tolerated in spite of the presence of other diseases.

M.MCK.

### 636—Japanese Journal of Medical Science and Biology.

- a. MIURA, K., 1954.—“Studies on chemotherapy against hookworm disease on the effect of 1-bromo-β-naphthol.” *7* (3), 265-273.
- b. RITCHIE, L. S., HUNTER, III, G. W., YOKOGAWA, M. & PAN, C., 1954.—“Parasitological studies in the Far East. X. An epidemiologic survey of Hokkaido, Japan.” *7* (5), 523-537.

(636a) As hookworm has been spreading in Japan since the war a more effective anthelmintic, without side effects, is being sought, earlier work having indicated that *Rhabdias bufonis* in *Bufo vulgaris japonica* and hookworms reacted *in vitro* and *in vivo* to anthelmintics in a similar way. 50 organic compounds were first tested on *R. bufonis* *in vitro* and in infected frogs. 1-bromo-β-naphthol gave the highest anthelmintic rate with a toxicity one quarter that of hexylresorcinol. In clinical tests by Professor Iwata, a dose of 23 gm., administered during a month to a man with serious ancylostomiasis, disinfestation was accomplished without any side effects. Miura reports that Dr. T. Todani carried out mass disinfestation, which was 100% effective, in 54 middle schoolboys with *Ancylostoma duodenale* and *Necator americanus* after two doses of 0.5 gm., and that Dr. Y. Fukeda succeeded in obtaining complete and safe disinfestation by giving 28 gm. in 23 days to a hookworm case with severe anaemia.

R.T.L.

(636b) Of 2,211 persons living in 19 widely separated areas of Hokkaido Island, Japan 79.3% had helminth infections, viz., *Ascaris lumbricoides* 68.1%, *Trichuris trichiura* 29.4%, hookworm 1.9%, *Trichostrongylus* sp. 16.9% and *Enterobius vermicularis* (by scotch tape swab) 48.4%. The incidence of *Strongyloides stercoralis*, *Clonorchis sinensis*, *Metagonimus yokogawai*, *Hymenolepis nana* and *Diphyllobothrium latum* did not exceed 0.5%. An important factor in maintaining helminth levels was the dooryard garden which is repeatedly fertilized directly from toilet receptacles.

R.T.L.

### 637—Japanese Journal of Veterinary Research.

- a. NAKAMURA, R. ET AL., 1954.—“Studies on ‘Kesen’ of horses in Hokkaido. I. Results obtained in 1953.” *2* (3), 109-116.

(637a) A chronic and stubborn itchy skin disease appears in early May in horses in Hokkaido and Tohoku districts of Japan, becomes severe in summer and disappears towards the cool season. It recurs in the same animals every year. The parts of the body with long hair are those usually attacked. *Staphylococcus* and *Streptococcus* were found in almost all cases. Microfilariae were detected in pieces of cutaneous tissue from four of the 23 horses bred in the Onbetsu district, but their numbers were very low. No benefit resulted from injections with the antimony derivatives, Stinal and Neostinal.

R.T.L.

**638—Japanese Journal of Veterinary Science.**

a. NISHIYAMA, S. & MORIZONO, M., 1954.—[An experiment on the artificial infection of cutaneous habronemiasis with experimentally isolated larvae of *Habronema megastoma*.] **16** (4), 177-184. [In Japanese: English summary p. 184.]

(638a) Maggots of *Musca sorbens* were experimentally infected with eggs or embryos of *Habronema megastoma* and large numbers of larvae were subsequently found in the newly emerged flies. The isolated larvae were then applied to the surface of the fetlock of a horse. The larvae entered the skin through the pores causing inflammatory changes. The hair roots were pushed aside and the hair follicles were greatly distended, leading to the destruction of the root sheaths, depilation and the formation of naked necrotic areas characteristic of cutaneous habronemiasis.

R.T.L.

**639—Journal of Animal Science.**

a. TALMAGE, R. V., MONROE, R. A. & COMAR, C. L., 1954.—“A survey of the effect of phenothiazine on uptake of radioiodine by the thyroids of farm animals.” **13** (2), 480-482.

b. EMERICK, R. J., BEMRICK, W., SHUMARD, R., POPE, A. L., HERRICK, C. A. & PHILLIPS, P. H., 1954.—“The protective effect of minerals on stomach worm infection for lambs on pasture.” [Abstract of paper to be presented at the 46th Annual Meeting of the American Society of Animal Production, Chicago, November 26-27, 1954.] **13** (4), 982.

c. BAIRD, D. M., VEGORS, H. H., SELL, O. E. & STEWART, T. B., 1954.—“Performance and parasitism of beef calves as related to level of protein and pasture feeding.” [Abstract of paper to be presented at the 46th Annual Meeting of the American Society of Animal Production, Chicago, November 26-27, 1954.] **13** (4), 1005.

(639a) Talmage *et al.* have studied the effect of four commercial phenothiazine preparations on the uptake of radioactive iodine by the thyroid of poultry, sheep, pigs, cattle and donkeys. All four reduced the uptake although purified phenothiazine did not affect it. This may be due to the presence of organic iodides as impurities in the commercial products and the nature of the impurities and the mechanism of their action are being investigated, as is also the existence and extent of hypothyroidism which may be produced in farm animals following the use of various phenothiazine preparations.

S.W.

(639b) Emerick *et al.* have shown experimentally that lambs infected with *Haemonchus contortus* showed lower faecal egg counts and less severe anaemia and did not succumb to the infection when they received supplements of trace mineralized salt plus dicalcium phosphate. Lambs which received iodized salt or trace mineralized salt developed severe anaemia and many died. The addition of phenothiazine to the salt mixtures in each case increased the haemoglobin values, reduced the faecal egg counts and increased the survival rate of the lambs.

S.W.

(639c) From experiments with beef calves kept on diets with high and low protein levels, Baird *et al.* conclude that it is the protein level rather than the level of forage consumption that affects the worm burden. Calves on a low protein diet had significantly higher loads of both adult and larval worms but the levels were not sufficiently high to impair the growth rate.

S.W.

**640—Journal of Economic Entomology.**

a. CARTER, W., 1954.—“Dichloropropane-dichloropropene mixtures of different composition as soil fumigants in pineapple land.” **47** (6), 1101-1103.

(640a) Carter has fumigated pineapple soils with three series of mixtures containing 1,3-dichloropropene, and measured the effect on fruit weight in the succeeding first crop and also in the ratoon crop. It is not stated whether any pathogen was present. Over the three series, comprising 13 mixtures, the 1,3-dichloropropene varied from 4% to 90% weight for weight. In general there were significant differences between fumigated plots and unfumigated controls but not between different mixtures. The results suggest that low concentrations of 1,3-dichloropropene make mixtures relatively ineffective without clearly indicating an optimum concentration.

B.G.P.

**641—Journal of the Egyptian Medical Association.**

- a. HALAWANI, A. & LATIF, N., 1954.—“On the toxicity of certain halogenated phenols, catechols o-benzoquinone and benzodioxole derivatives to *Planorbis* snails.” **37** (8), 957–962.
- b. HOFFMAN, D. O. & ZAKHARY, R., 1954.—“A study of water temperatures in a representative Egyptian canal in connection with schistosomiasis control.” **37** (8), 963–967.
- c. MOHAMED, A. S., 1954.—“Cystic disease of the urinary tract and its relation to bilharziasis and malignant neoplasms.” **37** (9), 987–1065.
- d. MOHAMED, A. S., 1954.—“The association of bilharziasis and malignant disease in the urinary bladder. Pathogenesis of bilharzial cancer in the urinary bladder.” **37** (9), 1066–1085.
- e. EL GAZAYERLI, M. & KHALIL, H. A., 1954.—“Observations on diseases of the appendix.” **37** (9), 1086–1092.
- f. GISMANN, A., 1954.—“Notes on various molluscan genera of the family Planorbidae involved in the transmission of bilharziasis in Africa and the Near East.” **37** (10), 1163–1184.
- g. BIBAWI, E., MAHFOUZ, M. M. & MASSOUDA, B., 1954.—“The spleen-carotid time and its evaluation in bilharzial hepatic fibrosis.” **37** (10), 1185–1192.
- h. KUNTZ, R. E., 1954.—“Preliminary report on the susceptibility of laboratory animals to infection by *Schistosoma haematobium*.” **37** (10), 1193–1201.
- i. EL-GINDY, M. S., 1954.—“Incidence of *Schistosoma mansoni* in the vector snail, *Planorbis boissyi*.” **37** (11/12), 1259–1271.

(641a) Halawani & Latif have investigated the molluscicidal activity of tetrachloro- and tetrabromo-catechol and tetrachloro- and tetrabromo-o-benzoquinone. The catechols and the quinones were far more active at lower pH but less so than the pentachloro- and pentabromo-phenol. The benzodioxole derivatives, which are formed by the reaction of tetrachloro- and tetrabromo-o-benzoquinone with aliphatic and aromatic aldehydes in sunlight, proved toxic to *Planorbis* in dilutions up to 15 p.p.m., but less active than the catechols and quinones. The importance of the hydroxyl group present in these derivatives and of the pH of the medium is stressed.

R.T.L.

(641b) Temperature is an important factor in molluscicidal activity. Water of a representative Egyptian canal showed a seasonal variation of at least 18°C. instead of 12°C. previously estimated by Hoffman & Zakhary in 1951.

R.T.L.

(641c) Although a healed bilharzial lesion may cause obstruction of the appendix, the fibrous tissue of bilharzial infiltration does not hinder the spread of sepsis to its outer coats. The authors hesitate to attach any importance to bilharzial infection in the causation of appendicitis in Egypt. A fair number of cases of catarrhal appendicitis are attributable to *Enterobius vermicularis* invasion.

R.T.L.

(641f) This is a critical review of the taxonomic literature dealing with those genera of Planorbidae concerned in the transmission of schistosomiasis and deals with much of the erroneous information contained therein. It is suggested that there is a greater latitude of biological variation in these molluscs than has hitherto been admitted and that new adaptations, due possibly to migration of infected populations from one area to another, may be taking place.

R.T.L.

(641h) All albino mice and hamsters became infected when exposed by Kuntz to *Schistosoma haematobium* cercariae but albino rats, cotton-rats and guinea-pigs were poor hosts. Rabbits and dogs were refractory. A few subnormal parasites were produced in cats, exposed to several thousand cercariae. Goats became infected only negligibly. Monkeys and baboons passed moderate numbers of eggs in the faeces, and in the urine on a few occasions. Kuntz formed the impression that, in the passage of eggs, primates are about as erratic as rodents.

R.T.L.

(641i) The factors which cause the seasonal variation of *Schistosoma mansoni* infections in *Planorbis boissyi* in Lower Egypt are: the water conditions, fluctuations in temperature, age of the molluscs, intensity of pollution and the duration of infection in the molluscs. Young snails were seldom infected. The high rate of mortality in infected snails may explain the decline in their numbers between August and December.

R.T.L.

**642—Journal of the Faculty of Medicine of Baghdad, Iraq.**

a. SHAMMAS, J. A., 1954.—“ Hydatid disease of the central nervous system in Iraq.” **18** (5/6), 63-79.

(642a) After reviewing the chief publications dealing with cases of hydatid of the brain, spinal cord and vertebrae, Shammas analyses five clinical cases of hydatid disease of the brain, seen in the Neurological Unit of the Teaching Hospital, Royal College of Medicine, Baghdad. The striking feature was the rapid accentuation of the general symptoms of intracranial pressure and the scarcity of localization symptoms. He attaches little importance to the Casoni test. Eosinophilia, if intestinal infections are excluded, is a more reliable sign. R.T.L.

**643—Journal of the Fisheries Research Board of Canada.**

a. BANGHAM, R. V. & ADAMS, J. R., 1954.—“A survey of the parasites of freshwater fishes from the mainland of British Columbia.” **11** (6), 673-708.

b. LAWLER, G. H. & SCOTT, W. B., 1954.—“Notes on the geographical distribution and the hosts of the cestode genus *Triaenophorus* in North America.” **11** (6), 884-893.

c. SCOTT, D. M., 1954.—“Experimental infection of Atlantic cod with a larval marine nematode from smelt.” **11** (6), 894-900.

d. WOLFGANG, R. W., 1954.—“Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907): I. The distribution of the metacercaria in eastern Canadian flounders.” **11** (6), 954-962.

e. WOLFGANG, R. W., 1954.—“Studies of the trematode *Stephanostomum baccatum* (Nicoll, 1907): II. Biology, with special reference to the stages affecting the winter flounder.” **11** (6), 963-987.

(643a) Ninety per cent of 5,456 fish belonging to 36 different species from rivers, lakes and drainage systems of British Columbia were infected with helminths. Under each piscine host the parasites are listed under localities and a check list of the parasites gives cross references to the host list. R.T.L.

(643b) Canadian records of the occurrence of *Triaenophorus* and those for the U.S.A. are tabulated separately. The species of fish in which *T. crassus*, *T. nodulosus* and *T. stizostedionis* have been reported in North America are listed. The hypothesis is advanced that *Triaenophorus* entered North America from Asia by way of a Siberian-Alaskan land bridge. R.T.L.

(643c) Larval *Porrocaecum decipiens* are common in the muscles and viscera of the Atlantic cod *Gadus callarias* and at least 13 other species of fishes in the Canadian Atlantic. Large cod occasionally feed on the smelt *Osmerus mordax*, winter flounder and smaller cod. Cod became infected when fed experimentally with larval *Porrocaecum* from smelt. R.T.L.

(643d) The six species of pleuronectids found on the eastern Canadian coast were infected with metacercariae of *Stephanostomum baccatum*; the winter flounder (*Pseudopleuronectes americanus*) was the most frequently and heavily infected and in the southernmost part of the Bay of Fundy this fish had the heaviest infection found. Hosts were usually more parasitized in inshore waters than in offshore waters and large fish carried greater numbers of cysts than did small fish. The pleuronectid hosts are listed with their distribution and sampling depths, cyst locations and appearance. M.MCK.

(643e) In this, the second of a series of papers on *Stephanostomum baccatum* in fish in eastern Canadian waters, Wolfgang notes that the growth of *Pseudopleuronectes americanus* was not impeded by heavy infections of metacercariae of *S. baccatum* and gross pathological effects were not observed. Control is therefore considered impractical. The seasonal increase in infection reported in these flounders by St. Mary Bay fishermen was not substantiated but infections were heavier in larger fish. For any given location samples from deeper water showed a higher incidence of infection than shoal samples. The data on incidence are presented in detail, tabulated and graphed. Metacercariae were found in the gills and soft exposed parts of round fish as well as in the superficial musculature of flat fish. Immature cysts always occurred on the surface of flounders whereas well developed cysts were deeper. At least 30% of the sea ravens *Hemitripterus americanus* which were examined in Passamaquoddy Bay

carried adult flukes in the rectum. Examination of 30 species (953 individuals) of other predatory fish showed one specimen of *S. baccatum* in *Myoxocephalus scorpius* and one in a halibut. In artificial holding pens the eelpouts *Macrozoarces americanus* (which are not natural hosts), the sculpins *Myoxocephalus octodecimspinosis* and sea ravens were infected by feeding to them metacercariae placed in the syphons of clams. The distribution of the trematode seemed roughly to parallel that of the gastropod hosts, and of these Wolfgang found about 1% of 875 *Buccinum undatum* and 6% of 125 *Neptunea decemcostatum* parasitized.

M.MCK.

#### 644—Journal of the Formosan Medical Association.

- a. DEMOS, E. A., CHEN, H. H. & HSIEH, H. C., 1954.—“Malaria and filariasis investigation in Pescadores (Peng-Hu) Islands of Taiwan, Republic of China.” **53** (9), 541–552.

(644a) Filariasis is endemic throughout the Pescadores Islands. The microfilaria of *Wuchereria bancrofti* was present in the night blood of 17 out of 96 inhabitants of Hu-Hsi village and of 16 out of 115 persons attending the Peng-Hu Provincial Relief Centre. Chyluria, hydrocele, lymphadenitis and elephantiasis of leg and scrotum were common. The hydrocele rate in 590 schoolboys in Peng-Hu was 2·2% and 16% in 100 inmates of the Provincial Relief Centre. *Culex fatigans*, the most prevalent mosquito, was the suspected vector; but no dissections were made.

R.T.L.

#### 645—Journal of the Japanese Veterinary Medical Association.

- a. KUROKAWA, K. ET AL., 1954.—[Preliminary report of surgical treatment of canine cardio-filariasis.] **7** (1), 16–20. [In Japanese.]
- b. YOSHIDA, T. ET AL., 1954.—[Diagnosis of fascioliasis in sheep and goats. Correlation of Furuichi test and faecal examination.] **7** (2), 64–67. [In Japanese.]
- c. ISHII, S. ET AL., 1954.—[Supplementary study on swine ascariasis.] **7** (3), 113–115. [In Japanese.]
- d. OISHI, I. ET AL., 1954.—[Anthelmintic effect of dichlorphenarsin hydrochloride for canine filariasis.] **7** (3), 116–118. [In Japanese.]
- e. WATANABE, S. ET AL., 1954.—[Various *Fasciola* species in Japan.] **7** (3), 124–126. [In Japanese.]
- f. ONO, Y. ET AL., 1954.—[Preventive study of *Fasciola hepatica*. II. The effects of environmental conditions and chemicals upon metacercariae.] **7** (4), 153–155. [In Japanese.]
- g. OSHIO, Y. ET AL., 1954.—[Some experiments on the infestation of *Strongyloides ransomi* section of livestock.] **7** (6), 259–261. [In Japanese.]
- h. EZAKI, Y. ET AL., 1954.—[Action of molluscicide on intermediate host of liver-fluke.] **7** (6), 282–285. [In Japanese.]
- i. SASAKI, N. ET AL., 1954.—[Studies on the skin microfilariasis in horse. III. Seasonal changes and distribution of microfilariae in the skin and relations to the parasitism of *Onchocerca cervicalis*.] **7** (7), 314–317. [In Japanese.]
- j. OISHI, I. ET AL., 1954.—[Therapeutic test for filariasis—efficacy of ‘Supatonin’.] **7** (7), 318–322. [In Japanese.]
- k. KUROKAWA, K. ET AL., 1954.—[Surgical treatment of canine cardio-filariasis. On the operative method of extracting *Filaria* from the pulmonary artery and its results in three cases.] **7** (8), 359–367. [In Japanese.]
- l. ARAI, S., 1954.—[Survey of internal parasites of medium sized animals in Japan.] **7** (8), 382–384. [In Japanese.]
- m. OISHI, I. ET AL., 1954.—[Anthelmintic effect of ‘Supatonin’ on *Ascaris canis*.] **7** (9), 405–407. [In Japanese.]
- n. TSUHARA, Y. ET AL., 1954.—[Survey of *Schistosoma japonicum* in cattle in Miyaki County, Saga Prefecture. III. Causative observation.] **7** (9), 426–427. [In Japanese.]
- o. IWATA, A. ET AL., 1954.—[Mass outbreak of *Dictyocaulus viviparus*.] **7** (10), 458–462. [In Japanese.]
- p. KITAZAWA, K. ET AL., 1954.—[Epidemiological survey on bovine fascioliasis in abattoirs of Matsuyama District, Ehime Prefecture.] **7** (12), 575–577. [In Japanese.]

#### 646—Journal of the Medical Association of Georgia.

- a. MITCHELL, F. N., 1954.—“Strongyloidiasis.” **43** (9), 791–797.

(646a) Clinical and laboratory reports are given of eight cases of *Strongyloides stercoralis* infection seen at five hospitals in Atlanta, Georgia, U.S.A.

R.T.L.

**647—Journal of Pathology and Bacteriology.**

a. LOPES DE FARIA, J., 1954.—“Pulmonary vascular changes in schistosomal cor pulmonale.” *68* (2), 589–602.

(647a) In schistosomal cor pulmonale the vascular changes, found mainly in the pulmonary arterial tree, (including hyaline thrombosis, endarteritis and diffuse thickening of the intima) are of greater significance than those caused by the presence of schistosome eggs in the pathogenesis of schistosomal pulmonary hypertension. The endarteritis, diffusely scattered and intense, with great narrowing of the arterial lumen, is followed by fibrous thickening or pulmonary arterial obstruction by schistosomal granuloma. The condition is illustrated by 21 photomicrographs.

R.T.L.

**648—Journal of Pharmacy and Pharmacology. London.**

a. GRIFFITHS, R. B., 1954.—“The application of some anthelmintics in veterinary practice.” *6* (12), 921–943.

(648a) Griffiths contrasts the use of anthelmintics in veterinary practice of 25 years ago and at the present time, and reviews those in current usage for the prevention and control of parasitic diseases and as curative agents, particularly phenothiazine and more briefly, hexachlorethane, sodium fluoride, toluene, *n*-butyl chloride, diethylcarbamazine, barium antimonyl tartrate, arecoline hydrobromide, dichlorophen and lead arsenate.

R.T.L.

**649—Journal of the Philippine Medical Association.**

a. NAÑAGAS, V. T., PASCUAL, A. A. & CANLAS, M. S., 1954.—“*Fasciola hepatica* in the common bile duct. Report of a case.” *30* (9), 448–450.  
 b. GARDUÑO, D. M. & ICASIANO, C. B., 1954.—“A case of human cysticercosis (*T. solium*).” *30* (11), 572–580.  
 c. McMULLEN, D. B., HUBENDICK, B., PESIGAN, T. P. & BIERSTEIN, P., 1954.—“Observations made by the World Health Organization Schistosomiasis Team in the Philippines.” *30* (12), 615–627.

**650—Journal of the Zoological Society of India.**

a. PREMVATI, 1954.—“Three new species of cercariae from the snail, *Melanoides tuberculatus* (Müller).” *6* (1), 43–50.

(650a) From *Melanoides tuberculata* at Lucknow, Premvati obtained three new cercariae, viz., *Cercaria tuberculatusi* n.sp., an ocellate furcercous distome with short furcal rami, which is characterized by the possession of five pairs of penetration glands lying posterior to the eye-spots and four pairs of head glands. The long tail stem is about two-and-a-half times the length of the small body. The eye-spots are in the posterior half of the body. The body and tail bear spines; fin folds are absent. It develops in long sporocysts. *Cercaria caudiglandula* n.sp. develops in cylindrical rediae. The caudal gland cells at the tip of the tail number 12 to 14. The body flame cells total 13 pairs, those in the tail could not be seen. It comes nearest to *C. megabura*. *Cercaria tuniforka* n.sp. differs from *Cercaria indicae XIV* and *C. hoopstadii* in the number of flame cells and of penetration glands; the large excretory bladder is Y-shaped. There is a double circlet of spines on the ventral sucker and two sets of cystogenous cells. It develops in sporocysts.

R.T.L.

**651—Karakulevodstvo i Zverovodstvo.**

a. ORLOV, I. V., 1954.—[Problems with regard to the control of sheep helminths at Karakul breeding State farms in the Crimea.] *7* (1), 47–50. [In Russian.]  
 b. KARMANOVA, G. A., 1954.—[The epizootiology of helminths of Karakul sheep under conditions in Uzbekistan.] *7* (1), 50–53. [In Russian.]  
 c. KUCHERENKO, V. P., 1954.—[Treatment of coenuriasis in sheep in State farms of the Astrakhan Karakul Breeding Trust.] *7* (2), 48–49. [In Russian.]

(651a) Orlov discusses problems of parasitic infections and their control in Karakul breeding farms in the Crimea. In his view bad management plays a very great part in the

losses sustained by some of these farms. He considers that if prophylactic measures were applied to the flocks of sheep improvement would be achieved.

C.R.

(651b) Karmanova investigated the seasonal variation in helminthic infection in Karakul sheep under the conditions obtaining in Uzbekistan. She found that *Dictyocaulus* infection begins to increase in autumn and reaches its maximum in spring. Among lambs in the age group from six months to one year, 19.7% are infected. The seasonal variation of nematodes in the alimentary canal shows that in the summer the infection is at its minimum, that it increases in the autumn, reaches its maximum in the winter and begins to decrease in the spring. She also found that eight out of 25 were infected with hydatid, four with *Cysticercus tenuicollis*, two with *Coenurus cerebralis*, one with hydatid and *C. cerebralis*, three with hydatid and *Cysticercus tenuicollis* and four with *C. tenuicollis* and *Coenurus cerebralis*. This proves a lack of veterinary measures.

C.R.

### 652—Khirurgiya. Moscow.

- a. SEMENOV, V. S., 1954.—[Associated hepatic alveolar and hydatid echinococcosis.] Year 1954, No. 6, pp. 73-74. [In Russian.]
- b. ROZHKOV, A. T., 1954.—[Two cases of echinococcosis of the mediastinum.] Year 1954, No. 6, pp. 79-80. [In Russian.]
- c. BELYAEV, A. A., 1954.—[Acute pancreatitis caused by ascaris]. Year 1954, No. 8, p. 71. [In Russian.]
- d. BABENIN, I. G., 1954.—[Diagnostic error in echinococcosis of the liver.] Year 1954, No. 8, p. 72. [In Russian.]
- e. MANEVICH, I. A., 1954.—[Peritonitis following rupture of echinococcal cyst of the spleen.] Year 1954, No. 8, p. 72. [In Russian.]
- f. BEBURISHVILI, G. A., 1954.—[Unusual localizations of echinococcosis.] Year 1954, No. 8, p. 73. [In Russian.]
- g. LIKHDED, S. I., 1954.—[Undiagnosed rupture of echinococcal hepatic cyst in closed injury of the abdomen.] Year 1954, No. 8, p. 73. [In Russian.]
- h. GORNAK, K. A., 1954.—[Multiple echinococcal lesions of the abdominal organs.] Year 1954, No. 8, pp. 73-74. [In Russian.]
- i. OVNATANYAN, K. T., 1954.—[Appendicitis as result of ascariasis.] Year 1954, No. 10, pp. 40-42. [In Russian.]
- j. BREGADZE, I. L., 1954.—[Technique of resection of alveolar echinococcosis with the left lobe of the liver.] Year 1954, No. 11, pp. 55-57. [In Russian.]
- k. KARTASHEV, Z. I., 1954.—[Surgical treatment of pulmonary echinococcosis.] Year 1954, No. 12, pp. 61-66. [In Russian.]

### 653—Klinische Wochenschrift.

- a. GROSS, R. & SCHMIDT, G. H. H., 1954.—“Über die Relativität des Antagonismus zwischen Corticoiden und Bluteosinophilen.” **32** (11/12), 245-248.

(653a) The eosinophilia produced in a volunteer by an experimental infection with 200 *Ascaris lumbricoides* eggs was only initially reduced by ACTH and cortisone acetate during their administration for 17 days following infection. By the 11th day of treatment the eosinophilia had risen to 1,100 eosinophils per cu. mm. and was not hindered from making a second rise, typical of the later phase of infection, to 1,500 per cu. mm. on the morning of the 18th day.

M.MCK.

### 654—Kyushu Memoirs of Medical Sciences.

- a. MIYAZAKI, I., 1954.—“Studies on *Gnathostoma* occurring in Japan (Nematoda: Gnathostomidae). II. Life history of *Gnathostoma* and morphological comparison of its larval forms.” **5** (2), 123-139.

(654a) Miyazaki continues his studies on the larval development and intermediate hosts of the three species of *Gnathostoma* found in Japan, viz., *G. spinigerum*, *G. doloresi* and *G. nipponicum*. *Mesocyclops leuckarti* and *Eucyclops serrulatus* proved experimentally to be first intermediate hosts of *G. spinigerum*. When the infected crustaceans are fed to the fish *Ophicephalus argus*, *Mogurnda obscura* and *Misgurnus anguillicaudatus*, the larvae mature to

the third stage and finally become encysted. These third-stage larvae may however be taken in by a further second intermediate host and become encysted again without undergoing any change, save in length, in avian and mammalian hosts. The twenty-two different species of vertebrates now known to be naturally infected with these third-stage larvae of *G. spinigerum* are tabulated. *Gnathostoma doloresi* was developed experimentally in *Mesocyclops leuckarti*, *Eucyclops serrulatus*, *Cyclops strenuus* and *C. vicinus*. Natural infections with third-stage larvae were present in 30 out of 286 *Hynobius naevius* and one out of 25 *H. stejnegeri*. These salamanders were collected in Kyushu. *G. nipponicum* is known to develop experimentally in *M. leuckarti*, *E. serrulatus* and *C. vicinus* but the second intermediate host is still undetermined.

R.T.L.

### 655—Landbouwkundig Tijdschrift.

a. TOXOPEUS, H. J., 1954.—“De huidige stand van het kweken op resistentie tegen aardappelmoehheid.” **66** (8), 537.

(655a) Seed of *Solanum andigenum* races, which were resistant to potato sickness, from the Commonwealth Potato Collection were crossed with various potato races in 1952. The resultant hybrids were found on an average to be 50% resistant to potato sickness and in some cases 80% of the plants were resistant. In the summer of 1953 a number of resistant hybrids were crossed with potato races and in 1954 seed of the first back crosses were grown. In these cases too 50% of the plants were found to be resistant with an 80% resistance in some cases. Toxopeus considers that much more work must be done before resistant races can be grown on a large scale.

A.E.F.

### 656—Lantmannen.

a. SALLNÄS, T., 1954.—“Svåra angrepp av leverflundra i Östsverige.” **38** (51), 1130-1133.

(656a) Sallnäs reports that, of 10,776 cattle killed in the abattoirs of the Östergötland [East Sweden] Co-operative Butchery during 1953, 2,318 (or 21.5%) were infested with liver-fluke. The percentage for 1952 had been 27.5. Infected animals weighed, on the average, 13.7 kg. less than healthy ones. This gives a total loss of carcass weight of 31,757 kg., and if to this is added the value of rejected livers and the financial loss caused by the lower quality of the meat generally, 204,862 Swedish crowns (roughly £14,000) are estimated to have been the cost of liver-fluke infection. Wide-spread and energetic measures (including the control of *Limnaea* with copper sulphate and treatment of cattle with Avlothane) which are being taken to combat the disease are outlined.

A.E.F.

### 657—Lebensmitteltierarzt.

a. DIRKSEN, G., 1954.—“Zur Differentialdiagnose der Finnigkeit beim Rind.” **5** (5), 52-54.

(657a) A calf killed because of suspected cysticerciasis was later found to be a case of multiple focal muscular necrosis. The nodules differed in cross section from those described as multiple muscle abscesses and Roeckl's granulomata.

G.I.P.

### 658—M.S.C. Veterinarian. Michigan State College.

a. CASLER, W. F., 1954.—“Canine strongyloidiasis.” **15** (1), 38-40, 56.  
b. GREEN, L. E. & GRUESSER, F., 1954.—“Canine whipworm treatment with Whipcide.” **15** (1), 42-44.

(658a) The faeces of a Chicago dog, which had symptoms resembling those of canine distemper, contained numerous larvae of *Strongyloides stercoralis*. Treatment with 400 mg. of caricide for four days had little effect. This was followed by 40 mg. per lb. body-weight daily

divided into four doses and given at six-hourly intervals. Live larvae ceased to appear in the faeces on the ninth day after this treatment was commenced but appeared again three days later. Caricide was repeated at about 50 mg. per lb. per day, divided into five doses and the faeces again became negative after six days. As reinfection was highly probable it is assumed that the larvae which reappeared in the faeces were from females derived from larvae still migrating through the lungs when treatment began.

R.T.L.

(658b) Whipcide in a single dose of 250 mg. per kg. body-weight after fasting was used to treat 31 dogs for whipworms. The faeces of 79% of the 24 cases followed up were negative. There was no evidence of toxicity.

R.T.L.

### 659—Maroc Médical.

- a. BOUCHEL, J., 1954.—“Onchocerose oculaire du noir africain.” **33** (348), 469-472.
- b. ROBY, J., 1954.—“Kyste hydatique de la rate de 6 kg. 950.” **33** (348), 537-538.

(659a) In five patients with punctate keratitis, chorio-retinal lesions of various kinds and microfilariae in the aqueous humour, the subjective symptoms lessened, the microfilariae disappeared and visual acuity improved after the administration of hetazan; but fever, muscle pains and neuralgia were sometimes severe. The eye defects which have so far been observed as a result of *Onchocerca volvulus* infection are listed.

M.MCK.

### 660—Médecine Tropicale.

- a. DÉJOU, L. & NAVARRANNE, P., 1954.—“Aspects chirurgicaux de quelques localisations abdominales des bilharzioses (*Schistosoma haematobium et mansoni*).” **14** (5), 513-541.
- b. GALLAIS, P., COLLOMB, H. & GUEDEL, J., 1954.—“Les manifestations neuro-psychiques des filarioSES.” **14** (6), 663-677.
- c. CARAYON, A., SANKALE, M., WILLM, A. & PREVOST, J. J., 1954.—“Les complications cérébro-méningées des filarioSES. (A propos d'une observation à *W. bancrofti* en Extrême-Orient).” **14** (6), 678-688.
- d. BOURREL, P., 1954.—“Traitement de l'ascariasis et de l'ankylostomose par la diethyl carbamyl-1-méthyl-4-pipérazine (notézine).” **14** (6), 749-753.

(660b) Gallais, Collomb & Guedel discuss various reports of neurological and psychological disturbances caused by filarial infections in man and animals and describe two cases. The first, an African negro from Chad, showed a persistent high eosinophilia and microfilariae in the peripheral blood; treatment with two courses of notezine produced a complete and striking cure of all the nervous symptoms which had included hemiparesis and a state of stupor. The evidence of a filarial infection was not so apparent in the second case although there was a marked eosinophilia; there was thrombosis of the right internal carotid artery but removal of the superior cervical ganglion did not improve the condition. The tissue of the ganglion, although examined histologically, had not at the time of presentation of this paper been examined for microfilariae by the technique described by Friess & Pierrou.

S.W.

(660c) Carayon *et al.* discuss previous reports of cerebro-meningeal complications in filariasis and give a detailed case history of one patient they have themselves observed. In this patient microfilariae of *Wuchereria bancrofti* were demonstrable in the cerebro-spinal fluid and a remission of symptoms followed antifilarial treatment.

S.W.

(660d) Bourrel, in the treatment of ascariasis and hookworm with notezine, found the minimum effective dose of notezine to be 12 mg. per kg. body-weight per day for 10 days, which was administered in tablets containing 0.1 gm. The drug cured 174 of 201 cases of Ascaris infection, 45 of 75 of hookworm, 24 of 33 with both parasites and 5 of 10 with Trichuris. Comparative rates of cure are given for thymol, chenopodium and santonin. He finds that notezine is safe for pregnant women, infants and children.

M.MCK.

**661—Mededelingen van het Instituut voor Rationele Suikerproductie. Bergen-op-Zoom.**

a. OUDEN, H. DEN, 1954.—“Het bietencystenaaltje en zijn bestrijding. I. Methoden te gebruiken bij het onderzoek naar kunstmatige en natuurlijke lokstoffen.” **24** (2), 101-120. [English & French summaries pp. 117-120.]

(661a) Two methods are described for the study of hatching *in vitro* of larvae from cysts of the beet eelworm. The first method involves the use of single cysts in droplets of solution. In the second method, up to 1,500 cysts can be used for each solution under test. The cysts lie on filter paper which is soaked from below. Both these methods allow adequate aeration; den Ouden suggests that the single cyst method is applicable to the study of nematocides as well as hatching stimulants.

H.R.W.

**662—Medical Journal of Australia.**

a. SANDARS, D. F., 1954.—“A sparganum from a Queensland woman.” **41st Year**, **2** (21), 817-818.

(662a) A sparganum, probably that of *Diphyllobothrium erinacei*, was removed from a small hard fibrous subcutaneous nodule below the right groin of a female out-patient at the Brisbane General Hospital.

R.T.L.

**663—Medicina. Madrid.**

a. PRIETO LORENZO, A., 1954.—“La anquilostomiasis en la huerta del Jarama (Madrid). I.” **22** (I(5)), 229-265.  
 b. PRIETO LORENZO, A., 1954.—“La anquilostomiasis en la huerta del Jarama (Madrid). II.” **22** (II(3)), 133-166.  
 c. PRIETO LORENZO, A., 1954.—“La anquilostomiasis en la huerta del Jarama (Madrid). III.” **22** (II(5)), 213-251.

(663a) This, the first of three papers on ancylostomiasis in the market gardening area of Jarama, near Madrid, is a general account of the history, geographical distribution and life-cycle of *Ancylostoma duodenale* and the morphological and biological characters of the larvae and adult worms.

M.MCK.

(663b) In the second of this series, Prieto Lorenzo gives an account of the market gardening practices in the locality of Jarama, near Madrid, an endemic focus for ancylostomiasis, and describes with intimate detail the squalor of the living conditions.

M.MCK.

(663c) This, the concluding paper, deals with Prieto Lorenzo's findings in Jarama, near Madrid. Although eggs of *Ancylostoma duodenale* were present in the faeces of 125 of 500 inhabitants, the incidence is almost certainly higher. Infections with *Enterobius vermicularis*, *Ascaris lumbricoides*, *Trichocephalus dispar* [*Trichuris trichiura*] and *Hymenolepis nana* were also present. Egg counts made in 107 persons suggested a moderate degree of hookworm infection. Random samples of earth were taken locally between June and October. Counts made by the Baermann technique showed an enormous larval density in the mud near small streams and hovels. Several cases of infection are described which were cured with tetrachlorethylene. The modes of penetration of the larva and symptoms and changes accompanying infection are reviewed.

M.MCK.

**664—Medicina Colonial. Madrid.**

a. MARINE PÉREZ, J., 1954.—“Teniasis. (Morfología, sintomatología, diagnóstico y tratamiento.)” **23** (6), 581-589.

**665—Medicina Contemporânea.**

a. COUTO, D., 1954.—“Acerca de algumas parasitoses do sistema nervoso.” **72** (4), 173–189.

(665a) Couto discusses the occurrence of schistosome infection in the nervous system of man and refers to a case of his in which myelitis was associated with lesions at various levels in the medulla, in which there were numerous schistosome eggs. M.MCK.

**666—Medicina Española.**

a. QUINTANA NUÑEZ, F., 1954.—“Las menopreciadas parasitosis intestinales. Estenosis funcional dolorosa de colon descendente por trichocephalosis.” **32** (186), 249–251.

(666a) Painful stenosis of the colon in a woman was traced by faecal examination to infection with *Trichocephalus dispar*. Cure was effected by the administration of capsules of male fern extract followed, on the same day, by an enema of a 1:50,000 thymol solution. A month later she received further capsules and atebrin tablets. With both treatments magnesium sulphate was given as a purge. The patient passed at least one coprolith and the pains ceased. M.MCK.

**667—Meditinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.**

- a. KROTOV, A. I., 1954.—[New principle in detection of antibodies for the immunological diagnosis of certain diseases including ascariasis (acceleration of erythrocyte sedimentation rate).] **23** (2), 102–110. [In Russian.]
- b. TURCHINS, M. E., 1954.—[Rectoromanoscopic and coprological studies in helminthiasis.] **23** (2), 110–114. [In Russian.]
- c. GABUZOVA-SHUBENKO, I. N., 1954.—[Ascariasis of the liver and biliary tract.] **23** (2), 114–118. [In Russian.]
- d. PONOMAREV, N. D., 1954.—[Pathogenesis and treatment of ascaris obstruction.] **23** (2), 118–120. [In Russian.]
- e. ZHUKOV, N. M., GRECHNEVA, L. V. & KAZAKOVA, A. G., 1954.—[Result of mass two-stage therapy of ascariasis.] **23** (2), 120–124. [In Russian.]

(667a) A method for the immunological diagnosis of helminth infections is based on the acceleration of the erythrocyte sedimentation rate (E.S.R.) in the citrated blood of infected persons on addition of the specific antigen (dry or emulsified). As the rate varies even in the same individual, Krotov used the relative percentage increase in E.S.R. as given by blood with the antigen to that of blood with physiological solution. A minimum of 25% difference should be obtained. The method was tested on cats with *Toxocara* and man with *Taenia saginata* infections and on man and animals with ascariasis. In the 15 persons with early ascariasis a well expressed acceleration of reaction was obtained, the reaction was negative or doubtful in 33 uninfected persons and was unreliable in 34 persons with sexually mature worm infections (20 positive, 14 negative or doubtful). The reaction is specific for each infection and the method gives quick response. G.I.P.

(667b) Using coprological and rectosigmoidoscopic examination, Turchins found that in a high proportion of cases, helminth infections caused various changes in the intestinal mucosa, indicated by pathological admixtures in the faeces. The most frequent change was hyperaemia (59%) and the greatest changes occurred with ascariasis and enterobiasis. The rectosigmoidoscopic picture in helminth infections differs from that of dysentery in that the hyperaemia is uniform, the depositions on the mucosa are transparent while inflammation and spasms of the intestine are absent. G.I.P.

(667e) Examination of 52 tubercular children in a sanatorium showed 16 to be infected with Ascaris. The first treatment with santonin showed that 26 more were infected and a second treatment one-and-a-half months later, revealed one more, giving a total infection of 82.7%. Similarly, in a second sanatorium with healthy children, treatment showed the true infection to be 71.7% and not 50.9%. The difference in reaction of the tubercular and healthy children to the infection and treatment is discussed. G.I.P.

**667—Meditinskaya Parazitologiya i Parazitarnie Bolezni. Moscow. (cont.)**

- f. BIZYULYAVICHYUS, S. K., 1954.—[Role of vegetables and berries in the epidemiology of helminthiasis in the population of Lithuania.] **23** (2), 124–126. [In Russian.]
- g. PROSHIN, I. G., 1954.—[Method of artificial hatching of ascarid larvae.] **23** (2), 126–132. [In Russian.]
- h. CHANISHVILI, I. V., 1954.—[Role of the strawberry in the epidemiology of geohelminthiasis.] **23** (2), 132–133. [In Russian.]
- i. VATOLINA, M. K., 1954.—[Comparative evaluation of method of therapy of ascariasis with sankafen, santonin and with concentrated doses of sankafen. (Preliminary communication.)] **23** (2), 134–136. [In Russian.]
- j. GIGITASHVILI, M. S., 1954.—[Treatment of hymenolepisis with filixan. (Preliminary communication.)] **23** (2), 136–137. [In Russian.]
- k. GUDZHABIDZE, G. S., 1954.—[Method of examining preliminary filters for the detection of helminth eggs.] **23** (2), 172–174. [In Russian.]
- l. TIMOSHIN, D. G., 1954.—[Methods of preparation of specimens of helminth larvae and eggs.] **23** (2), 174–175. [In Russian.]
- m. EPSHTEIN, S. I. & LICHMANOV, N. G., 1954.—[A case of *Dirofilaria* infection in man.] **23** (2), 175–176. [In Russian.]

(667f) The helminth eggs found on vegetables and berries from various gardens were mainly ascarid (93·8%), *Trichuris* (4·8%) and *Enterobius* (1·1%). 98% of vegetables from gardens manured with untreated sewage were infected. This is six to eleven times more than those from gardens where such manuring has not been used, and nine to fourteen times more than vegetables usually cleaned and sold in markets. Manuring of the soil in the spring produced an infection six times higher than manuring in autumn and eleven times higher than manuring the previous year.

G.I.P.

(667g) To obtain *Toxocara canis* larvae hatched artificially under conditions similar to those in the host, eggs were first placed into gastric juice from a dog for 17 to 24 hours and then into 50% dog or cow bile in Ringer's solution with various additions of pancreatic juice. 33% to 91% of the larvae hatched. It was found that bile was necessary for hatching but gastric juice was not. The optimum temperature for the formation of viable larvae in the eggs was 30°C. and for hatching 39°C.

G.I.P.

(667h) Strawberries collected in Tiflis and its surroundings were infested with *Ascaris* and *Trichuris* eggs and *Ancylostoma* larvae. The hookworm larvae penetrate the strawberries to a depth of 5 mm. and remain alive for two to three days.

G.I.P.

(667i) Ascariasis was treated with santonin or Sankafen in doses prescribed by the Russian Ministry of Health. 18–20 Sankafen tablets (equivalent to 0·288–0·32 gm. of santonin) for adults and less according to age for children, were given over two days and were preceded and followed by a purge. The efficacy of Sankafen was 60% and that of santonin 66·2%. Concentrated Sankafen treatment, which consisted of the same dose divided into three portions given at half-hour intervals cured 75·4% and lasted only about two hours including the purge.

G.I.P.

(667j) Fifty *Hymenolepis* cases were treated with filixan (male fern extract in tablets); of these 40 were cured by one treatment, four by a second treatment and six could not be followed up. Children up to five years old received 3–5 gm. of filixan, those six to ten years old 5–6 gm. and those over ten years old 5–7 gm. The dose was spread over one (preferably) or two to three days, and was preceded by a purge and an enema and followed by a purge.

G.I.P.

(667k) For an accurate and quicker examination for helminth eggs and larvae of filters from sewage, soils and vegetables, an adaptation to the microscope stage of a toothed plastic triangle is described and figured.

G.I.P.

(667l) Timoshin describes the methods in use at the Institute of Malaria, Medical Parasitology and Helminthology of the Ministry of Health U.S.S.R., for preparing and preserving for demonstration trichostrongylid, hookworm and *Ascaris* ova without damage.

G.I.P.

(667m) Two specimens of *Dirofilaria repens* were found in a swelling 3–4 cm. above the right eyebrow of a man living in Astrakhan.

G.I.P.

**667—Meditinskaya Parazitologiya i Parazitarnie Bolezni. Moscow. (cont.)**

- n. DRUZHININA, E. I., 1954.—[A case of *Hymenolepis diminuta* infection in man.] **23** (2), 177. [In Russian.]
- o. TIMOFEEVA, E. E., 1954.—[Epidemiology of opisthorchiasis in the Rostov region.] **23** (2), 177–178. [In Russian.]
- p. PROSTAKOVA, T. N., 1954.—[A case of *Dipylidium* infection in man.] **23** (2), 178. [In Russian.]
- q. BUSLAEV, M. A., 1954.—[Control of malaria, helminth infections and other parasitic diseases during 1953 and tasks for 1954.] **23** (3), 195–200. [In Russian.]
- r. KOVTUN, A. S., 1954.—[Brief considerations on control of malaria and other parasitic diseases in RSFSR during 1953 and tasks for 1954.] **23** (3), 200–203. [In Russian.]
- s. VISHNEVSKAYA, S. M. ET AL., 1954.—[Epidemiology and prevention of helminth infections in the region of construction of the Kakhovsk centre of waterways and of the Southern Ukrainian Canal.] **23** (3), 244–248. [In Russian.]
- t. GORDON, E. I., 1954.—[On the duration of *Ascaris* and *Trichuris* infections.] **23** (3), 249–251. [In Russian.]
- u. MOKHUR, S. S., 1954.—[Dynamics of the decrease of helminth infections among settlers in the Akimov district of the Zaporozhye region.] **23** (3), 251–253. [In Russian.]
- v. ZHUKOV, N. M., 1954.—[Epidemiological effectiveness of control of helminth infections in the population.] **23** (3), 253–256. [In Russian.]
- w. NOSIK, A. F., 1954.—[Epidemiology of echinococcosis.] **23** (3), 256–259. [In Russian.]
- x. PODYAPOLSKAYA, V. P., 1954.—[Helminthiases and infections.] **23** (4), 291–297. [In Russian.]
- y. MUKVOZ, L. G., FREIMAN, A. G. & PANOK, S. Y., 1954.—[Effect of hymenolepiasis on the course of chronic dysentery in infants.] **23** (4), 298–301. [In Russian.]
- z. RUBINSHTEIN, M. E. & GELLER, I. E., 1954.—[Treatment of hymenolepiasis in chronic dysentery in children.] **23** (4), 302–304. [In Russian.]
- ba. NASIROV, M. R., GLASHKINA, T. P. & TUAEV, S. M., 1954.—[Treatment of taeniarhynchiasis with acridine.] **23** (4), 305–306. [In Russian.]

(667 o) *Opisthorchis felineus* was found in 149 out of 327 cats at Rostov, in 19 out of 20 cats on a collective fish farm, while three cats from a mining village were negative. The presence of *O. felineus* was correlated with the feeding of cats on raw fish.

G.I.P.

(667t) The local population in Turkmenistan was almost free of helminth infections while those who had settled there during the last five or more years had a varied helminth fauna but mainly *Trichuris* and *Ascaris*. Dividing the settlers into groups according to the length of their stay and comparing their infections, Gordon found that ascariasis had nearly died out after one to two years and trichuriasis after three to five years, thus confirming the duration of life of *Ascaris* in man to be one to two years and of *Trichuris* five years.

G.I.P.

(667u) Recent settlers, from western Ukraine, in the Akimov district of the Zaporozhye region were much more infected with *Ascaris* (81%) and *Trichuris* (38%) than the local population (1·6% and 1·5% respectively). Faecal examination of the settlers on arrival and 18 months later showed a degree of spontaneous recovery from these infections. This and treatment reduced ascariasis to 2·2% and trichuriasis to 10·4% in three years.

G.I.P.

(667v) By applying yearly mass treatment of the population in a village the ascaris infection of 33% in 1950 was reduced to 17·7% in 1953 and the number of infected persons passing unfertilized eggs increased by 47%. During the same period a higher initial infection with ascariasis in the population of a second village was similarly lowered (from 64·7% to 46·3%) but the persons passing non-infective eggs increased only by 26·6%.

G.I.P.

(667x) Podyapolskaya discusses the greater severity, often resulting in death, of helminth infections occurring concurrently with various bacterial infections, particularly ascariasis with dysentery.

G.I.P.

(667ba) Out of 33 *Taenia* cases treated with 8–10 tablets, equivalent to 0·8–1·0 [no units given] of acridine at a rate of two tablets every ten minutes, 18 passed entire worms and 13 worms without scolices. Saline laxative was given on two days and an enema on the evening before the treatment, which was followed in two hours by sodium sulphate.

G.I.P.

667—*Meditinskaya Parazitologiya i Parazitarnie Bolezni. Moscow.* (cont.)

- bb. GUSEINOV, G. A., 1954.—[Effectiveness of the treatment of ascariasis with santonin prepared from *Artemisia transiliensis*.] **23** (4), 306-308. [In Russian.]
- bc. AVALISHVILI, S. D. & MAKHLINA, R. M., 1954.—[Effectiveness of oil of chenopodium produced in the Soviet Union.] **23** (4), 308-309. [In Russian.]
- bd. LIMAKHINA, M. A., 1954.—[Blood and haemopoiesis in the bone marrow in opisthorchiasis.] **23** (4), 309-311. [In Russian.]
- be. DURSUNOVA, S. M., 1954.—[Application of oxygen in the treatment of trichocephaliasis.] **23** (4), 311. [In Russian.]
- bf. MUDZHIRI, M. S., 1954.—[*Punica granatum* bark extract as a therapeutic agent in tapeworm infection. (Preliminary note.)] **23** (4), 311-313. [In Russian.]
- bg. SOKOLOV, N. P., 1954.—[Data on echinococcosis in the Karaganda region.] **23** (4), 313-317. [In Russian.]
- bh. KOSHEVA, A. F. & LYAKHOV, S. M., 1954.—[A case of *Erpobdella octoculata* L. in the nasal cavity.] **23** (4), 355-356. [In Russian.]
- bi. POBEREZHNICKH, L. I. & ZAKHODNIK, I. D., 1954.—[Enterobiasis in the aetiology of a case of chronic appendicitis.] **23** (4), 356. [In Russian.]
- bj. MELNIKOVA, M. A., 1954.—[A rare case of *Hymenolepis diminuta* infection in a child.] **23** (4), 357. [In Russian.]
- bk. PORKSHEYAN, O. K., 1954.—[Cerebral cysticerciasis in a 2½-month old infant.] **23** (4), 357. [In Russian.]
- bl. SHCHERBININ, I. V., 1954.—[Opisthorchiasis in cats in Odessa.] **23** (4), 358. [In Russian.]
- bm. KROTOV, A. I., 1954.—[Investigation of parasitic human and animal helminths in Sakhalin.] **23** (4), 368-369. [In Russian.]

(667bb) Satisfactory preliminary results were obtained in ascariasis of cats by using santonin, prepared from *Artemisia transiliensis*, in doses of 10 mg. per kg. body-weight for a two-day course of treatment (the single dose was 1·7 mg. per kg.). A 68·2% efficacy was reached when 230 persons with ascariasis were treated with santonin given three times daily over two days. In 15 children each daily dose was followed by a saline laxative and seven showed various toxic effects, while slight side effects were observed in nine out of 101 children who only received laxative after the last treatment.

G.I.P.

(667be) Oxygen was intubated in easy stages into the rectum of 24 persons with trichuriasis on three successive days, one-and-a-half to two hours after a light breakfast, and was followed in 45 minutes by a saline laxative. The dose for adults was 800 ml. on the first day, 1,000 ml. on the second and 1,200 ml. on the third, and for children 500 ml., 750 ml. and 1,000 ml. respectively. In two cases stomach ache and giddiness were observed. Of the 14 persons followed up for two months after the treatment only four were cured.

G.I.P.

(667bf) Two percolated extracts of *Punica granatum* bark were prepared. The aqueous extract was given to four *Taenia* cases. Two, who had received 6-8 gm. of extract, passed worms without scolices. The other two who had received 12 gm. passed the scolices also. The acetic acid extract was administered to 83 *Taenia* cases and the proportion of those who passed worms with scolices rose from 58·1% after 6·5-8 gm. to 87·5% after 10-12 gm. Three children with *Hymenolepis nana* passed large numbers after the first treatment; one was cured by a second treatment, two are still under observation. The extracts were non-toxic but side effects were observed in some cases after the saline laxative.

G.I.P.

(667bl) *Opisthorchis felineus* was found in 6·3% of 126 cats autopsied in Odessa in the course of six years. Fish sold in Odessa markets come from the Dniester river.

G.I.P.

(667bm) Krotov gives the history of investigations into the helminths of vertebrates on Sakhalin Island and reports that during 1948-52, 4,096 animals have been autopsied and 306 men and 2,000 domestic animals coprologically examined, covering 70% of the vertebrate species on the island. Of the 304 helminth species found 12 were parasitic in man [but are not listed].

G.I.P.

**668—Medizinische. Stuttgart.**

- a. NOLTE, K. A., 1954.—“Atebrin als Bandwurmmittel.” Year 1954, No. 36, pp. 1219-1221.
- b. GÖNNERT, R., 1954.—“Therapeutische Fortschritte auf dem Gebiete der Wurmkrankheiten.” Year 1954, No. 37, pp. 1231-1235.
- c. HORNBOSTEL, H., 1954.—“Zur Frage der Blutbildveränderungen bei *Taenia saginata*-Kranken.” Year 1954, No. 38, pp. 1273-1274.
- d. STEIN, R., 1954.—“Zur Problem der Bandwurmkur.” Year 1954, No. 43, pp. 1457-1458.
- e. DORN, W., 1954.—“Behandlung der Ascaridiasis mit dem synthetischen Ascaridol-Präparat Ascarisin.” Year 1954, No. 47, p. 1581.

(668a) Nolte has treated a series of 17 cases of *Taenia saginata* infection with atebrin (0.8 gm. in 100 c.c. water administered by duodenal sound, followed half-an-hour later with 20 gm. Carlsbad salt in 15% solution). In eleven cases a scolex was recovered; five others were negative for *T. saginata* five months later. Male patients showed no side effects but there was some vomiting among females: this however was reduced to transient nausea when luminal was administered. Nolte considers atebrin to be the remedy of choice in this infection. A.E.F.

(668b) Gönnett presents a review of recent advances in the treatment of helminthic infections. [There are no references to the literature.] A.E.F.

(668c) Hornbostel has studied the blood picture in 133 cases of *Taenia saginata* infection. No significant change was found in the red blood cell picture and only 14% showed an eosinophilia of more than 4%. It is concluded that eosinophilia cannot be regarded as characteristic of *Taenia* infections. A.E.F.

(668d) Stein reports the successful administration of Vermella [a halogenated oxy-derivative of 1-methyl-4-*iso*-propyl-benzol] capsules in the treatment of *Taenia* infection in man. Two or three capsules were given three times at intervals of 30 minutes to one hour, followed (two hours later) by Carlsbad salt or castor oil. The drug was well tolerated. Eleven out of 12 patients were cured although many of them had not responded to other anthelmintics. A.E.F.

(668e) Dorn reports that elimination of the worms was achieved in 112 out of 115 cases of human infection with *Ascaris lumbricoides* after treatment with the synthetic ascaridole preparation Ascarisin. The dosage varied from two capsules of 0.1 gm. for young children to three capsules of 0.2 gm. for adults. Transient side effects (rise in temperature, headache, or nausea) were observed in only five patients. A.E.F.

**669—Medizinische Klinik.**

- a. BERNING, H., 1954.—“Dünndarmverschluss durch Ascaridenknäuel bei einem zweijährigen Kind.” **49** (49), 1954, 1959.
- b. ZÖLLNER, W., 1954.—“Eine akute Leukämie mit gleichzeitiger Bilharziasis und Vergiftung bei einem elfjährigen Kind.” **49** (49), 1956-1958.

(669a) Berning gives a clinical report, which includes X-ray results, on an instance of intestinal obstruction by *Ascaris* in a two-year-old child. In this case no operation proved necessary. G.I.P.

(669b) A fatal case of acute leukaemia in a Negro girl was complicated by schistosomiasis and by poisoning with a Bantu medicine probably of the opium group. Eggs were found in the urine and at autopsy schistosome infection was also present in the pancreas. G.I.P.

**670—Medycyna Weterynaryjna.**

- a. TARCZYŃSKI, T., 1954.—“O nowej próbie usprawnienia diagnostyki choroby motyliczej.” **10** (8), 457-460.
- b. HAUPTMAN, B., SOBIECH, T. & ZAKRZEWSKI, A., 1954.—“Enzootyczna postać motylicy u owiec.” **10** (12), 699-703.
- c. GRABDA, E. & GRABDA, J., 1954.—“Próby stosowania czterochlorku węgla ( $CCl_4$ ) metodą zastrzyków podskórnych u owiec zamotyliczonych.” **10** (12), 703-705.

d. MAZUR, J. & ZALESKI, J., 1954.—“Badania *in vitro* nad przeciwbaczym działaniem wyciągu nasion rącznika (*Ricinus communis* L.).” **10** (12), 719–720.

(670a) Tarczyński discusses Benedek & Nemeser's egg concentration technique for the diagnosis of liver-fluke in sheep and cattle [for abstract see Helm. Abs., 22, No. 291b] and agrees that the method is precise and can reveal slight infections, but in view of Hay's (1949) observation that the rate of egg-laying varies considerably in the course of the year, he doubts if it can be used to determine the degree of individual infections. G.I.P.

(670b) The authors describe the symptoms of a spontaneous outbreak of a disease in sheep on a newly stocked farm. But only after the sheep had been condemned for slaughtering was the disease histologically diagnosed as fascioliasis. G.I.P.

(670c) Fascioliasis of sheep was treated by subcutaneous injections of 20 ml. of carbon tetrachloride in liquid paraffin in the proportion of 1:5 by weight. In three small groups of sheep the infection was reduced from 25% to 8·7%, from 41·6% to 11·1% and from 56·2% to 4·2% respectively. Even very young sheep and those advanced in pregnancy bore the treatment well. With skilled help 50–60 injections can be done per hour. G.I.P.

(670d) Working on Pawłow & Raczew's (1948, 1949) statement that *Ricinus communis* seeds act on *Ascaris* but not on other intestinal parasites of pigs, Mazur & Zaleski have shown by experiments *in vitro* that the aqueous seed extract depressed the activity of *A. lumbricoides* after 24 hours at 5–15% concentrations and caused complete paralysis at 20% concentration. *Lumbricus terrestris* was killed by 50–500 mg. per cent concentrations after 24 hours and *Enchytraeus albidus* even by 1:4,000 concentrations after 10 hours, while at 500 mg. per cent the extract had no effect on *Hirudo medicinalis*. G.I.P.

## 671—Memorias do Instituto Butantan.

a. RUIZ, J. M. & RANGEL, J. M., 1954.—“Estrigéidas de répteis brasileiros (Trematoda: Strigeata).” **26**, 257–278. [English summary p. 273.]

(671a) This is an account of six strigeids of Brazilian reptiles. *Pseudoneodiplostomum brasiliensis* n.sp. from a cayman, *Caiman* sp., is the first of this genus to be recorded in Latin America. The extension of the vitellaria to the posterior end of the body distinguishes it from all the other species of the genus except *P. acetabulata*. From this it differs in the relative lengths of the body segments, the position of the adhesive organ in the centre of the anterior segment and the size of the suckers (0·061 mm. or 0·064 mm. for the oral and 0·061 mm. or 0·074 mm.  $\times$  0·092 mm., for the ventral sucker). *Petalodiplostomum aristoteleri* n.sp. from the snake *Liophis miliaria* differs from the type, *P. aencyloides*, in the greater width of the anterior segment, which is 2·105–2·342 mm. wide, in the lateral elongation of the adhesive organ, the size of the oral sucker (0·185–0·246 mm.), which is equal to or slightly larger than the ventral sucker, and in the smaller eggs, that measure 0·092–0·141 mm.  $\times$  0·049–0·074 mm. Redescriptions are given of *Prolecithodiplostomum constrictum* from *Caiman* sp., *Cystodiplostomum hollyi* from *C. sclerops*, *Heterodiplostomum lanceolatum* from *Xenodon guentheri* and *Ophiodiplostomum spectabile* from *Liophis miliaria* and *Leimadophis poecilogyrus*. A list is given of the 15 strigeid species reported from reptiles in Brazil. M.MCK.

## 672—Memorias do Instituto Oswaldo Cruz.

a. DIAS, E., 1954.—“Nota prévia sobre ensaios de combate aos planorbídeos por métodos biológicos e bioquímicos.” **52** (1), 247–252.  
 b. DIAS, E., 1954.—“Guerra bacteriológica contra os hospedeiros intermediários da esquistosose humana.” **52** (2), 315–320. [Also in English pp. 320–327.]  
 c. JORGE DA SILVA, A. A., 1954.—“Nova espécie do gênero *Aplectana* Railliet & Henry, 1916 (Nematoda, Cosmocercidae).” **52** (2), 415–418.

(672a) A culture of *Bacillus pinottii* was tested as a molluscicide in a pond thickly populated with *Australorbis glabratus*. The pond measured 30 m.  $\times$  60 m. (calculated volume 2,181,000 litres) and had a flow of about 600 litres per minute. To 1,943 litres of the culture

in 1% peptone solution, was added 15 kg. of peptone. This was pumped on to the vegetation and into the water. Dead snails appeared from the third day and were kept under the water in a perforated drum. After eight months the dead snails totalled 307,197 and live ones were hardly seen. No large-scale lethal effects were noticed in other animals. Cultures of other germs, without a terminal spore, obtained from the ovotestes of snails and applied with unrefined sugar or rice flour, and the yeast, *Saccharomyces cerevisiae*, applied with unrefined sugar or molasses, were lethal to snail populations even when these were repeatedly replenished. The yeast culture treatment killed fish and leeches. Application of kerosene to water surfaces, or of rice flour followed by the bacterial culture, practically exterminated molluscs. Treatment of pools with liquid residues from distilleries killed all the *Australorbis nigricans* and fish present.

M.MCK.

(672b) A molluscicidal bacterium [*Bacillus pinottii*, mentioned in abstract No. 672a above] was isolated from the ovotestes of snails. For application of these bacteria in the field, broth or 1% aqueous peptone solution is prepared in 200-litre drums and boiled for a few minutes. The pH is adjusted to 7.2-7.4. After cooling to 50°-60°C., this medium is inoculated heavily with bacteria. It is applied to ponds by pumping or spraying it on to the margins, bottom and floating vegetation. Streams are treated heavily where water is more or less stagnant. As proteins are probably not attacked by bacteria unless traces of peptone are present, intensive treatment can be made by dissolving 5-10 kg. or more of powdered peptone in each 200-litre drum of culture before application. The successful treatment of three large snail habitats is described. The bacterium is lethal to *Australorbis glabratus*, *A. bahiensis*, *Tropicorbs janeirensis*, *Drepanotrema culturatum*, *D. cimex* and *D. anatinum*.

M.MCK.

(672c) *Aplectana lopesi* n.sp., from the frog *Hyla fuscovaria*, compared with other species of the genus which have spicules measuring about 0.15 mm. × 0.011 mm., is much longer than *A. pusilla*; the gubernaculum is smaller (0.034 mm. × 0.013 mm.) than in *A. americana* and the caudal papillae are more numerous, there being 7 post-anal, 3 ad-anal and about 18 pre-anal pairs and some irregular subdorsal papillae; there are more caudal papillae than in *A. longicaudata*, the bulb is smaller and the distance between the excretory pore and anterior end is greater. *A. flindersi* has a larger and differently shaped gubernaculum and in *A. itzocanensis* there is a slender spicule sheath, a larger gubernaculum, the caudal papillae are fewer and the females smaller.

M.MCK.

### 673—Memorias de la Sociedad de Ciencias Naturales La Salle.

a. DÍAZ UNGRÍA, C., 1954.—“Dos especies de estrongilos, parásitos intestinales del caballo, nuevas para Venezuela.” 14 (39), 261-271.

(673a) Díaz Ungría describes briefly and illustrates with photographs *Trichonema* (*Cylicocyclus*) *elongatum* var. *kotlani* and *Oesophagodontus robustus*. These are two equine nematodes new to Venezuela.

M.MCK.

### 674—Monatshefte für Tierheilkunde.

a. BOCH, J., 1954.—“Untersuchungen über den Wurmbefall von Schafherden auf Hochalmen.” 6 (10), 248-255.

(674a) Boch reports on the incidence of helminths in sheep kept on Bavarian hill pastures during summer months. Five separate flocks at altitudes varying between 1,100 and 1,900 metres were examined by means of 50 fresh faecal samples from each flock. Results showed that an average of 90% was infected. Stomach worms were by far the most common (either *Haemonchus* or *Trichostrongylus* alone, or mixed infections with *Ostertagia*, *Nematodirus*, *Chabertia* or *Oesophagostomum*). *Bunostomum* and *Moniezia* were found only in young animals and *Trichuris* was rare. Lungworms were present in four of the flocks. Some concern is felt that these parasites might be transmitted to roe-deer, red deer and chamois, and it is urged that infected sheep should always be properly treated with anthelmintics by a veterinarian before they are driven out to hill pastures.

A.E.F.

**675—Monatshefte für Veterinärmedizin.**

a. WETZEL, R., 1954.—“Biologische Grundlagen der neuzeitlichen Wurmbekämpfung.” **9** (21/22), 506-511.

(675a) Wetzel considers that veterinarians tend to think of the control of helminth infections merely in terms of treating clinically ill animals. This he likens to an aimless guerilla warfare which ignores the basic facts of bionomics and epidemiology. He discusses various stages in the cycle of infection, distinguishing between the pre-parasitic phase (including the effects of climate, soil, season and economic conditions) and the parasitic phase, subdivided into pre-patent and patent periods. Wetzel then deals generally with other important factors: (i) diagnosis, (ii) therapeutic and preventive treatment, (iii) periodic treatment, (iv) hygienic and nutritional measures, and (v) large scale mass treatment. He concludes with brief observations on the practical application of basic principles in the control of liver-fluke, horse strongyles, and stomach worms of sheep. A.E.F.

**676—Münchener Medizinische Wochenschrift.**

a. BURGSTEDT, H. & PACHE, H. D., 1954.—“Pädiatrie (Wurmkrankheiten).” **96** (34), 954-957.  
 b. HERRLICH, A., 1954.—“Zweckmässigste Kur gegen Bandwürmer.” **96** (37), 1063.  
 c. JÖRGENSEN, G., 1954.—“Psychotischer Verwirrtheitszustand bei Ascaridenlarvenwan-  
derung.” **96** (47), 1371-1372.

(676a) Burgstedt & Pache present a critical review, with literature references, of recent work on helminthic infections with special reference to those of importance in children. A.E.F.

(676b) In a brief note Herrlich emphasizes that treatment for *Taenia* infection should not be given until diagnosis has been established beyond all doubt. Treatment (with atebriin, Acranil or the tin preparation Cestodin) should only be carried out under medical supervision.

A.E.F.

(676c) Jörgensen reports a case of mental confusion in a six-year-old boy, followed a few days later by transitory eosinophil lung infiltration. The symptoms are thought to have been caused by migrating *Ascaris* larvae in the brain or to have been due, indirectly, to pulmonary migration. Three months later an adult *Ascaris* was passed. A.E.F.

**677—Mycologia.**

a. DRECHSLER, C., 1954.—“Some hyphomycetes that capture eelworms in southern States.” **46** (6), 762-782.

(677a) Drechsler describes and figures three new predacious fungi, *Arthrobotrys anchonia*, *Dactylella megalospora* and *D. phymatopaga*. The fungi were obtained from decaying plant tissue from Florida and Louisiana. The first captures nematodes by contracting rings of hyphae, the second by adhesive hyphal networks and the third by means of sticky knobs. The last was found to be capturing a species of *Aphelenchooides* probably *A. subtenuis*. J.B.G.

**678—Nachrichtenblatt des Deutschen Pflanzenschutzdienstes. Stuttgart.**

a. GOFFART, H., 1954.—“Erfahrungen mit D-D und mit P 4 bei der Bekämpfung von Kartof-  
felnematoden (*Heterodera rostochiensis* Wr.).” **6** (11), 161-166.

(678a) Soil infested with potato-root eelworm was injected with D-D mixture and with P4, a clear liquid containing the same active materials as D-D. No differences in nematicidal effect were observed between the chemicals. Both heavy and light soils were used and injections made in autumn and spring. Following treatments of 60-90 cc. per sq. m. there were fewer cysts on potato roots as compared with the control and an increased yield, but the extent of these effects depended largely on soil conditions, especially soil moisture and temperature. Spring treatments had a more marked nematicidal effect than autumn but sometimes gave rise to tainting of tubers and phytotoxicity. In soils containing clay or

humus the effectiveness of the chemicals was markedly reduced. In some cases there was an increase in the number of cysts in the soil of treated plots due to the increased root growth of the crop. The efficacy of old samples of the chemicals was less than that of fresh ones. M.T.F.

### 679—New Zealand Medical Journal.

- a. BARCLAY, S., 1954.—“Cardiac hydatid cyst. Report of a case.” **53** (298), 605–606.

### 680—Nordisk Jordbruksforskning.

- a. VAPPULA, N. A., 1954.—“Nematodproblem i Finland.” **36** (1/4), 323–325. [Discussion p. 325.]
- b. JOHANSSON, E., 1954.—“Nematodproblem i Sverige.” **36** (1/4), 326–330.
- c. LINDHARDT, K., 1954.—“Jordbaerål.” **36** (1/4), 331–332. [Discussion p. 332.]

(680a) The nematode problems in Finland are reviewed. *Ditylenchus radicicola* was the first parasitic nematode to be recorded in Finland and it caused damage as early as 1880; its importance has diminished because crop rotation has become more common. *Heterodera rostochiensis* is known only from four places. Government regulations have been issued to prevent it from spreading. *H. schachtii* has not been found in Finland. *Ditylenchus dipsaci* on red clover has been found only in two places up to the present; it is considered that this parasite is disseminated by imported seed and figures are given which show that stem nematodes commonly occur. The paper is a summary of a lecture and in the discussion which followed, Bovien for Denmark and Bingefors for Sweden pointed out that these results are not in agreement with results obtained in these two countries. Stem nematode may occur in red clover seed but it is not common in well cleaned seed. Strawberry plants attacked by nematodes probably *Aphelenchoides fragariae* were found in two places in 1952. S.B.

(680b) In Sweden the following plant-parasitic nematodes are being especially studied, viz., *Heterodera rostochiensis*, *H. schachtii*, *H. marioni*, *H. major* and *Ditylenchus dipsaci*. Different methods of control are discussed. The most important tasks in nematode investigations in Sweden are a survey of parasitic nematodes in leys and cereals and an investigation of the relations between plants and parasites. S.B.

(680c) In Denmark strawberries are attacked by *Aphelenchoides ritzema-bosi* and *A. fragariae*. The symptoms are described. Treatment of young strawberry plants with hot water seems to be a useful method of controlling the spread of the nematodes. S.B.

### 681—Nuovi Annali d'Igiene e Microbiologia. Rome.

- a. BRONZINI, E., 1954.—“Il Centro di Parassitologia del Giardino Zoologico di Roma. (Elenco delle nuove specie di parassiti descritte).” **5** (1), 53–64. [English & French summaries pp. 62–63.]

(681a) Bronzini gives descriptions and figures of the new species of helminths described since 1951 from the Zoological Gardens of Rome. These are *Ancylostoma paroduodenale* and *Metathelazia servalis* from *Felis serval*, *M. exilis* from *Herpestes cafra*, *Paronchocerca rousseloti* from *Pternistis leucoscepus* and *Uncinaria thapari* from *Ailurus fulgens*. *Ancylostoma brasiliense* from *Felis serval* is briefly redescribed. M.MCK.

### 682—Osaka Daigaku Igaku Zassi.

- a. SAKODA, A., 1954.—[Experimental studies on the development of hookworms in unsuitable hosts. I.] **6** (4), 291–305. [In Japanese: English summary p. 291.]

(682a) Rabbits which had been repeatedly injected intravenously with whole human blood or with red blood cells were infected with larvae of *Ancylostoma duodenale*. In those injected with whole blood no larvae which had passed the third ecdysis were found, while in those in which only red corpuscles were used some of the larvae showed sexual differences. Almost all the larvae in the injected rabbits showed an increase in length and in complexity

as compared with those in the control rabbits. The migratory course of the larvae was irregular and development took longer than in normal hosts. None of the larvae became adult or established themselves in the intestine.

R.T.L.

### 683—Pflanzenschutz. Munich.

a. SIMON, 1954.—“Blattmissbildungen von Rotklee bei Stockälchenbefall.” **6** (5), 67–68.

(683a) Simon has observed that in red clover attacked by *Ditylenchus dipsaci* it is not uncommon to find leaves bearing four or five leaflets instead of the normal three. The usual symptoms of stem eelworm disease are also present.

M.T.F.

### 684—Philippine Journal of Animal Industry.

a. SAN AGUSTIN, O. D., 1954.—“Filariasis in AFP war dogs. Observations in treating canine filariasis with fuadin and caricide.” Year 1953, **14** (1/4), 245–253.

(684a) Agustin groups under four headings the symptoms shown by 130 Japanese German Shepherd dogs imported into the Philippines by the U.S. Army Forces in 1951, and summarizes his observations on their treatment for *Dirofilaria immitis* infection by the standard intraperitoneal injections of fouadin daily for six days with a rest on the 7th day and continued until the blood became negative for microfilariae. Four months later 13% of the dogs were again positive. 100% of 39 dogs became negative after two to three weeks of treatment with caricide tablets, 400 mg. thrice daily, and rechecks remained negative from four to eight months. Antifilarial treatment is expensive and should not be administered to heavily infected dogs or those in poor condition as the clinical reactions may prove fatal. R.T.L.

### 685—Phytiatrie-Phytopharmacie. Paris.

a. RITTER, M., 1954.—“Essai de lutte contre l’anguillule des racines au moyen du dibrométhane.” **3** (2), 55–62.

(685a) After pointing out that cultural methods of control are not efficient against *Meloidogyne* sp., Ritter describes some experiments on tomatoes in which ethylene dibromide was used to fumigate the soil; the results are tabulated. He deals with its nematicidal and phytotoxic properties and given a summary of methods for using the substance. He concludes that it is the most active nematicide judged by the quantities necessary and expresses the hope that it may be used by agriculturists.

J.B.G.

### 686—Plant Pathology. London.

a. SOUTHEY, J. F., 1954.—“New or uncommon plant diseases and pests in England and Wales.” **3** (1), 30.  
 b. BROWN, E. B., 1954.—“Resistenta—an eelworm resistant clover.” **3** (4), 122.  
 c. DUNNING, R. A., 1954.—“Beet stem eelworm.” **3** (4), 133–134.  
 d. BROWN, E. B., 1954.—“Stem eelworm on wild white clover.” **3** (4), 138.  
 e. NEWTON, H. C. F. & DUTHOIT, C. M. G., 1954.—“Stem and bulb eelworm on potatoes.” **3** (4), 139–140.  
 f. BROWN, E. B., 1954.—“Chrysanthemum eelworm in tomato fruits and *Callistephus*.” **3** (4), 140.

(686a) Cysts of *Heterodera cacti* were discovered for the first time on the roots of a cactus, *Coryphantha* sp. which had been imported from Spain.

J.B.G.

(686b) Brown grew the Swedish late-flowering variety of red clover, Resistenta, and an English variety on fields in two districts of eastern England where the clover strain of *Ditylenchus dipsaci* was known to be prevalent. The clovers were sown under spring barley and appeared in good condition after harvest but in the following spring eelworm damage was apparent on both fields. In each case Resistenta was less damaged than the English variety but Brown points out that an English late-flowering variety might have done as well as Resistenta since late-flowering varieties are generally less susceptible to eelworm than are broad red.

M.T.F.

(686c) Dunning describes the symptoms of attack by *Ditylenchus dipsaci* on sugar-beet, first in the seedling stage when the petioles become thickened and distorted. The plant may grow away from this but later in cool, moist, slow-growing conditions the main growing point may be killed and a "multiple crown" plant result. In late summer and autumn crown canker may develop. In a plot artificially infested with cankered beet the following became infested: sugar, fodder and red beets, mangolds, oats, rye, onions, peas, beans, sainfoin, kidney vetch, alsike, *Stellaria media* and *Atriplex patula*. Dunning shows that infested oats and onions may be a source of infestation to beets. He calculates the loss at two sites in 1953, where the sugar-beet was damaged by stem eelworm, to have been between £4 and £5 per acre. M.T.F.

(686d) Brown notes the occurrence of *Ditylenchus dipsaci* on wild white clover on two small plots in Cambridge in 1949, with little damage, and on a field crop in Lincolnshire in the same year when some damage was recorded. The main symptoms were swellings just below the flower-heads and on the leaf stalks. M.T.F.

(686e) The authors describe the symptoms of attack by *Ditylenchus dipsaci* on a crop of potatoes, varieties Home Guard and Majestic. Swedes, *Sonchus arvensis*, *Mentha arvensis*, *Anagallis arvensis* and *Polygonum convolvulum* also harboured the nematode. The yield of potatoes was negligible and no infestation was found in the tubers. Pot tests and field observations indicate that the nematodes were of the oat race. Red clover grown in the field was also attacked although the symptoms were not typical. M.T.F.

(686f) Two tomato fruits, grown outdoors, showing a light brown decay at the calyx end, were found to be harbouring *Aphelenchoides ritzema-bosi*. No symptoms could be found on other tomatoes on the nursery but infestation was found abundantly on the annual aster, *Callistephus*. The symptoms were similar to those common on chrysanthemums. M.T.F.

#### 687—Policlinico (Sezione Pratica). Rome.

- a. SAMAJA, U., 1954.—"Reazioni locali ed ematiche provocate da liofilizzato di *Tenia saginata*." **61** (31), 914-918. [English & French summaries pp. 917-918.]
- b. TELO, W. & PANCIROLI, E., 1954.—"Osservazioni cliniche su due rari casi di ipersensibilità locale al sanguisugio." **61** (50), 1674-1679. [English & French summaries p. 1679.]

(687a) Samaja performed intradermal and cutaneous tests with lyophilized extract of *Taenia saginata* on groups of 20, 31, 15 and 30 persons, some apparently free of helminths, others with past *Ascaris* infections or past or present taeniasis. The reactions were unreliable. M.MCK.

(687b) At the third application of the medicinal leech to a man of 50 (10 days after the first bleeding) he developed eosinophilia in the blood and local pruritic oedematous areas, 5-7 cm. in diameter and each surrounded by a hyperaemic halo. The manifestations subsided gradually with antihistamine treatment. The first time leeches were applied to a woman of 66 they produced violet-pink pruritic wheals, 9-11 cm. across, which were refractory to antihistamine treatment but disappeared after a few days. M.MCK.

#### 688—Prace Wrocławskiego Towarzystwa Naukowego.

- a. JANISZEWSKA, J., 1954.—"Caryophyllaeidae europejskie ze szczególnym uwzględnieniem Polski." Seria B, No. 66, 73 pp.

(688a) Janiszewska gives an account, including historical data, of the European Caryophyllaeidae and describes their anatomy and biology and the distribution of the 17 recorded European species: of these, 12 are adults (two of which are doubtful) belonging to the Caryophyllacinae and five (including one doubtful) are larval types belonging to the Lytocestinae. She also discusses the phylogeny of the group. G.I.P.

#### 689—Practitioner.

- a. THOMSON, S., 1954.—"Trichinosis." **173** (1038), 724-727.

(689a) This is a résumé of current knowledge on trichinosis.

R.T.L.

**690—Prensa Pediátrica. Buenos Aires.**

- a. GARAGUSO, P., 1954.—“Reflexiones sobre el tratamiento de la oxyuriasis en la infancia. Estudio crítico basado en trescientas observaciones personales.” *5* (25/26), 23-27.
- b. GARAGUSO, P., 1954.—“Nuestra experiencia en el diagnóstico de las teniasis por *Taenia saginata* en el niño. Estudio comparativo sobre el valor de los distintos recursos para su diagnóstico.” *5* (27/30), 59-74.

(690a) After prolonged observation of about 300 children treated for *Enterobius vermicularis* infections with nearly all the preparations available in Argentina, Garaguso's conclusions were very different from those of other workers. He points out that the claims of efficiency for the same product vary because subsequent observations are not thorough and the duration and intensity of infections are not considered. All possible methods of diagnosis should be repeated at intervals, for more than a year, to be sure of a cure and the mothers should be instructed how to search the children's faeces. Some 20 of the 300 children were refractory to varied and repeated treatments. Garaguso suspects an endogenous cycle. For light infections he recommends gentian violet and hexylresorcinol.

M.MCK.

(690b) Faecal samples (one smear and one concentrated sample per person) were negative in 6 of 27 children with *Taenia saginata* infections; proglottides were found in the faeces of all the children and eggs were detected by the cottonwool swab (wiped three times round the anus) in all but two children who had recently been bathed. Garaguso recommends the swab method as that of choice for detecting *T. saginata* infection. Nevertheless in other cases he found far more *Taenia* eggs by Graham's adhesive cellophane method. The elimination of proglottides seemed to increase in two children who received garlic tablets. M.MCK.

**691—Priroda. Moscow.**

- a. PETROCHENKO, V. I., 1954.—[Control of helminthiases in ducks on poultry state farm.] *43* (12), 104-105. [In Russian.]

(691a) High mortality on a duck-breeding farm, where anthelmintic treatment for a number of years had been ineffective, was caused by *Streptocara crassicauda*, *Tetrameres fissispina* and *Polymorphus magnus*. The infections were traced to lake Timkono on which the ducks foraged and which was heavily populated with *Gammarus lacustris*. By feeding the naturally infected *Gammarus* to ducks, adults of the three species were obtained, proving that *G. lacustris* is their intermediary. From a survey of seven lakes in the neighbourhood, it was found that they fell into two groups; lakes with sandy peaty bottoms without moss vegetation, in which *G. lacustris* was always present, and lakes with a dark slimy bottom layer that gave off hydrogen di-sulphide, in which *G. lacustris* does not survive. The removal of the ducks to a lake of the latter kind was followed by their complete recovery from these infections. G.I.P.

**692—Proceedings. American Society of Sugar Beet Technologists, General Meeting.**

- a. WOOD, R. R. & SERRO, R. F., 1954.—“Identification of some materials in root exudates of nematode (*Heterodera schachtii*, Schmidt) host plants.” 8th (1954), Part 1, pp. 271-275.
- b. SWINK, J. F., 1954.—“Breeding for resistance to the sugar beet nematode.” 8th (1954), Part 2, pp. 109-111.

(692a) Analysis of root exudates from host plants of beet eelworm showed that there were three main constituents, i-inositol, galactinol and glutamic acid. Experiments with beet eelworm cysts in these chemicals suggest that they may stimulate hatching of the eelworm eggs.

H.R.W.

(692b) By selecting sugar-beet plants which were apparently tolerant to beet eelworm in a heavily infested field, Swink claims to have bred plants with a reasonable degree of tolerance to eelworm attack.

H.R.W.

**693—Proceedings of the American Veterinary Medical Association.**

- a. SHAW, J. N., 1954.—“Internal parasites in young cattle and sheep in Oregon.” 91st Annual Meeting (1954), pp. 111-115.
- b. BAKER, N. F., 1954.—“Trichostrongylidosis—the mouse as an experimental animal.” 91st Annual Meeting (1954), pp. 185-191. [Discussion p. 192.]
- c. BENBROOK, E. A., 1954.—“A life cycle approach to parasite control.” 91st Annual Meeting (1954), pp. 247-249. [Discussion p. 249.]
- d. OSGOOD, S. B. & STONE, W. J., 1954.—“Recent outbreaks of trichinosis in man in Oregon.” 91st Annual Meeting (1954), pp. 420-429. [Discussion pp. 429-430.]
- e. KUHN, G., TRUM, B. F. & RUST, J. H., 1954.—“The use of ionizing radiation in food preservation and parasite destruction—a survey.” 91st Annual Meeting (1954), pp. 431-434.

(693b) Baker describes and illustrates by photographs the gross and histological changes in mice following experimental infection with single doses of 400 infective larvae of *Nemato-spiroides dubius*. As the effects are similar in many respects to those due to trichostrongylids in domesticated animals this parasite should prove of value for investigations in the laboratory into the influence of trichostrongylids on metabolism and food utilization of the host, the immunological mechanism of “self cure”, the feasibility of developing genetically resistant strains, the screening of certain anthelmintics and the production of toxic metabolic products by this group of parasites.

R.T.L.

(693c) The value of a “life cycle approach” to parasite control in small animal practice is illustrated by *Dipylidium caninum* of which the proper control is based on (i) anthelmintic treatment, (ii) removal of fleas and lice, (iii) destruction of flea adults, eggs, larvae and pupae in the dog’s surroundings, especially his sleeping quarters, (iv) burial or burning of the dog’s faeces, (v) periodical re-examination for tapeworms, fleas and lice. Other examples cited are infections by hookworm and ascarids.

R.T.L.

(693e) In this general review of the use of ionizing radiation in food sterilization, the works of Schwartz (1921), Alicata & Burr (1949) and Gould, Van Dyke & Gomberg (1953) are cited to show that exposure of meat to X-rays and Co<sup>60</sup> gamma rays inhibits the sexual development of *Trichinella spiralis* without causing the death of the parasites.

R.T.L.

**694—Proceedings of the Florida State Horticultural Society.**

- a. CAMP, A. F., 1954.—“Symposium on ‘spreading decline’ of citrus. Introduction.” **67**, 74.
- b. DUCHARME, E. P., 1954.—“Cause and nature of spreading decline of citrus.” **67**, 75-81.
- c. BROOKS, T. L., 1954.—“The host range of the burrowing nematode internationally and in Florida.” **67**, 81-83.
- d. BRAGDON, K. E. & HANKS, R. W., 1954.—“Distribution of the burrowing nematode, *Radopholus similis*, in Florida.” **67**, 83-85.
- e. SUIT, R. F., 1954.—“The experimental basis and limitations of the pull-and-treat method of handling spreading decline.” **67**, 85-89.
- f. HOWELL, M., 1954.—“Practical aspects and costs of the ‘pull and treat’ method.” **67**, 89-90.
- g. SUIT, R. F., 1954.—“Resistant rootstock studies using the temperature tank for screening.” **67**, 90-91.
- h. FORD, H., 1954.—“Field experimental work with rootstocks and its limitations.” **67**, 91-92.
- i. SUIT, R. F., 1954.—“Research on non-phytotoxic soil treatments.” **67**, 92-93.
- j. FORD, H., 1954.—“Investigations with systemic treatments.” **67**, 94.
- k. BIRCHFIELD, W., 1954.—“The hot water treatment of nematode-infested nursery stock.” **67**, 94-96.
- l. OCHSE, J. J. & BREWTON, W. S., 1954.—“Preliminary report on *Crotalaria* versus nematodes.” **67**, 218-219.
- m. YOUNG, T. W. & RUEHLE, G. D., 1954.—“Parasitic nematodes on avocados—a preliminary report.” **67**, 280-284.
- n. KELSHEIMER, E. G., 1954.—“Nematodes infesting certain bulbs, corms and tubers.” **67**, 297-300.

(694a) Camp outlines briefly some of the events leading up to the intensification of work on spreading decline to discover its cause. Suit & DuCharme in 1953 showed that the cause was the burrowing nematode, *Radopholus similis*.

J.B.G.

(694b) [This paper appears also in *Citrus Ind.*, 1954, 35 (11), 6-7, 18; (12), 5-7. For abstract see No. 611a above.]

(694c) [This paper appears also in *Citrus Ind.*, 1954, 35 (12), 7-8, 14-15. For abstract see No. 611b above.]

(694d) A survey undertaken by the Florida State Plant Board shows that 325 groves out of 420 inspected have *Radopholus similis* causing slow decline of citrus. Inspected groves are mapped if slow decline is present and root samples from the subsoil are taken and examined in the laboratory. Burrowing nematodes have been found in citrus and ornamental nurseries. It is possible that *R. similis* was introduced into Florida on infested tropical ornamental plants.

J.B.G.

(694e) Pulling and burning of trees affected with spreading decline and treating the soil with D-D mixture was started experimentally in 1947 although the cause of the trouble was not recognized until 1953. Some of the experimental work is described. At present the infested area of a citrus grove is mapped, preferably after dry weather. Root samples are taken on the borders of the infested area and four rows of trees surrounding the visible area are pulled, together with those in the infested area; these are all burnt. The ground is then injected with D-D at 60 lb. per acre to a depth of 12 inches. No resistant root-stocks are available and reinestation may occur from nursery stock or from adjacent groves. Barriers up to 12 feet wide injected with D-D at 100 lb. per acre are suggested to prevent further spread of slow decline and are being tried.

J.B.G.

(694f) When spreading decline is found in a citrus grove and has been mapped, the owner being willing, trees are bulldozed out of the ground and burnt. The ground is ploughed to bring up roots which are collected and burnt. The area is levelled and injected with D-D mixture. Two months later the area can be replanted. The costs per acre are quoted. J.B.G.

(694g) In searching for citrus root-stocks resistant or tolerant to *Radopholus similis*, seedlings are grown in infested soil in culture tanks maintained at 75-78°F. Differences are clearly seen after three months and roots are then examined for the nematode. A table shows some of the results. No resistant root-stocks have yet been found.

J.B.G.

(694h) Valencia oranges have been budded on 52 species and varieties of citrus and planted in fields infested with *Radopholus similis*. Stocks will be later checked for nematode damage. Search has also been made for trees apparently tolerant to attack in decline areas. Rooted shoots from these are also being tested.

J.B.G.

(694i) Various chemicals and materials were applied to the soil around citrus trees attacked by *Radopholus similis* in attempts to control the nematode. In no case was there any control. The search for a non-toxic nematicide continues.

J.B.G.

(694j) Anthelmintics, antibiotics, systemic insecticides, hormones, "pesticides", inorganic and organic chemicals and mixtures of materials have been injected into citrus trees suffering from slow decline. So far nothing has been found to control *Radopholus similis*.

J.B.G.

(694k) The thermal death point of *Radopholus similis* was determined *in vitro* to be ten minutes exposure at 122°F. Seedlings of rough lemon can tolerate this temperature for up to three hours, Cleopatra seedlings were defoliated by exposures greater than one hour, crotons tolerated up to 35 minutes.

J.B.G.

(694l) Various species of Crotalaria were grown in rows on two plots of soil heavily infested with root-knot nematode. Rows of *Solanum hyporrhodium* were planted alternately with the Crotalaria. After 11 months the numbers of nematodes in the soil were determined by sieve and Baermann funnel. Seven of 21 Crotalariae tested had negligible nematodes in the

soil. It is suggested that *Crotalaria* root systems offer a toxic effect to nematode attacks and that planted in advance of a crop may have a tendency to decrease nematode damage to that crop.

J.B.G.

(694m) *Radopholus similis* and *Pratylenchus* spp. have been found on the roots of avocado in various groves in Florida. Experiments are being conducted on the effect of these nematodes on the host. Damage to avocado roots by the two nematodes is figured. The control of burrowing nematode on citrus is mentioned.

J.B.G.

(694n) *Gladiolus* in Florida is attacked by various nematodes, among them root-knot, *Trichodorus* sp. and the sting nematode. The effects of root-knot are figured. Aerial symptoms are stunting, yellowish-green colour, wilting and general unthriftiness. Experiments showed that root-knot could be carried over on corms. Parathion and malathion gave some control of root knot on caladium.

J.B.G.

## 695—Proceedings of the Louisiana Academy of Science.

a. BIRCHFIELD, W., 1954.—“The sting nematode, *Belonolaimus gracilis*, in Louisiana.” **17**, 49–50.

(695a) Experimental evidence has been obtained that *Belonolaimus gracilis* can live and reproduce on the roots of sugar-cane in steam-sterilized soil. No visible symptoms or statistically significant effects on green weight were observed.

R.T.L.

## 696—Proceedings of the Pakistan Science Conference.

a. ABDUSSALAM, M. & SARWAR, M. M., 1954.—“Intermediate host of *Schistosoma turkestanicum* in Pakistan.” [Abstract.] 6th (1954), Part III, p. 228.  
 b. IRFAN, M. & SARWAR, M. M., 1954.—“Studies on the development of *Ascaris vitulorum*.” [Abstract.] 6th (1954), Part III, p. 228.  
 c. SIDDIQUI, E. H., 1954.—“A simple method of culturing ova in the body of the nematode, *Ascaridia galli* (Schrank, 1788).” [Abstract.] 6th (1954), Part III, p. 229.  
 d. SIDDIQUI, E. H., 1954.—“Effects of various temperatures upon the embryonation of ova in the body of *Ascaridia galli* (Schrank, 1788).” [Abstract.] 6th (1954), Part III, pp. 229–230.

(696a) *Schistosoma turkestanicum* has been experimentally transmitted to a guinea-pig by subcutaneous injection and to a clean lamb by the oral administration of schistosome cercariae discharged by *Limnaea acuminata forma rufescens* collected from a spring in the village of Pandori, near Rawalpindi. The worms were found in the mesenteric veins of both experimental animals. Scrapings of congested spots in the small intestine and numerous whitish nodules in the liver of the lamb contained eggs characteristic of this schistosome, which has only been recorded once from a sheep in Murree, District Rawalpindi, in Pakistan.

R.T.L.

(696b) The ova of *Ascaris vitulorum* develop to the infective stage in 11 days at 26°C. They undergo degeneration, after rapid cleavage, when incubated at 30°C., or over. When kept at 10°C. no development takes place. When large numbers of embryonated eggs were fed to guinea-pigs, most of the larvae were still in the liver at autopsy 1½ months later. Buffalo calves under natural conditions pass *A. vitulorum* eggs on the 25th day after birth. The period of infection can be shortened by stopping, or lengthened by continuing, the milk supply to the infected calf.

R.T.L.

(696c) A simple method of obtaining embryonated eggs of *Ascaridia galli* is to leave the entire female in 2% formalin solution at 80°F. to 84°F., room temperature [in India]. By the 15th day 10% of the eggs become embryonated, the maximum percentage being reached in a minimum of 21 days.

R.T.L.

(696d) When complete females of *Ascaridia galli* are kept in a 2% formalin solution, 71% of the eggs within the body become embryonated in 21 days at 25°C. to 30°C., 72% at 30°C. to 33°C., nil at 37°C. and 5°C. to 10°C. and in 2% potassium dichromate solution 73% at 25°C. to 30°C., 74% at 30°C. to 33°C., and nil at 37°C. and at 5°C. to 10°C. Only 9% of those kept at the low temperatures embryonated after being brought to room temperature. The larvae which hatched in the potassium dichromate solution were short lived.

R.T.L.

**697—Proceedings of the Royal Academy of Sciences, Amsterdam.**

a. BRETSCHNEIDER, L. H., 1954.—“Die submikroskopische Struktur der Darmzelle von *Ascaris suilla*. Ein elektronenoptischer Analyse.” Series C, 57 (4), 524-539. [English summary p. 538.]

(697a) Bretschneider reports on his detailed studies of the intestinal cells of *Ascaris lumbricoides* from pig (both before and after food intake) by means of the electron microscope. The cells contain at their apex hollow, rod-like structures filled with cytoplasm which carry substances towards the cells; tubules at the base of the cells serve for drainage from the cell to the body-cavity (the basal membrane is porous). Descriptions of the granules and the cytoplasm are also given, and it is noted that changes in the size and shape of the mitochondria seem to be related to accumulation of proteins. The nucleoli appear to be highly active in the metabolic process. The work is to be continued.

A.E.F.

**698—Proceedings of the Society for Experimental Biology and Medicine.**

a. NACHIMSON, H. I., BENSON, R. H., SZAFIR, J. J., TURNER, R. B., ALLEN, Jr., H. C. & TALMAGE, R. V., 1954.—“Comparative study of effects of phenothiazine and iodine on thyroid uptake of  $I^{131}$ .” 87 (1), 157-162.

b. BUNDE, C. A., BLAIR, H. E., BURCH, G. R. & LEE, J. W., 1954.—“Ascaricidal action of cadmium.” 87 (3), 549-550.

(698b) When 0.02% of cadmium oxide was mixed with dry ground grain and given to pigs as the only food for three days, the mixture was readily eaten and 96% to 99% of *Ascaris lumbricoides* were removed. More than 0.03% was unpalatable and 1% caused emesis and the feed was refused.

R.T.L.

**699—Proceedings. Soil Science Society of Florida.**

a. WALLACE, A. T. & CLARK, F. A., 1954.—“Breeding flue-cured tobacco for root-knot resistance and desirable leaf type.” 13th Annual Meeting (1954), pp. 83-87.

b. PARK, F. D. R., 1954.—“Experience of the Dade County Water Conservation District in controlling water hyacinths and water weeds.” 14th Annual Meeting (1954), pp. 140-153.

c. FELDMESSE, J. & FEDER, W. A., 1954.—“Symposium: plant nematodes in Florida. Maintaining and determining viability of nematodes in vitro.” 14th Annual Meeting (1954), pp. 154-156.

d. BROOKS, A. N., 1954.—“The sting nematode, *Belonolaimus gracilis*, Steiner.” 14th Annual Meeting (1954), pp. 157-158.

e. GOOD, Jr., J. M. & BLUE, W. G., 1954.—“Relationships between plant parasitic nematodes, pathogenic fungi, and Ladino clover yields in experimental pot studies.” 14th Annual Meeting (1954), pp. 159-166.

f. CHRISTIE, J. R., GOOD, Jr., J. M. & NUTTER, G. C., 1954.—“Nematodes associated with injury to turf.” 14th Annual Meeting (1954), pp. 167-169.

g. OVERMAN, A. J., 1954.—“Use of nematocides on established turf.” 14th Annual Meeting (1954), pp. 170-173.

h. RITTY, P. M., 1954.—“A preliminary report on nematode control in a turf maintenance program.” 14th Annual Meeting (1954), pp. 174-176.

i. DUCHARME, E. P. & SUIT, R. F., 1954.—“Nematodes associated with citrus in Florida.” 14th Annual Meeting (1954), pp. 177-181.

j. SUIT, R. F., DUCHARME, E. P. & BROOKS, T. L., 1954.—“Non-citrus plants in relation to spreading decline.” 14th Annual Meeting (1954), pp. 182-184.

(699a) Experiments indicate that high resistance to root-knot nematodes (*Meloidogyne* spp.) and narrow leaves are associated by genetic linkage in flue-cured tobacco. There is no association between leaf length and nematode resistance but leaf length and leaf width are positively correlated. It is expected that a recurrent selection breeding programme which is in progress will result in plants with increased resistance and broader leaves. A test with hybrid tobacco indicated that at present such material would not be economically useful.

M.T.F.

(699b) The amine formulation of 2,4-D, which has 4 lb. of acid equivalent per gallon of liquid, has been used as a spray for water hyacinth control, at the average concentration of about one gallon of commercial liquid per 100 gallons of water, in the Dade County Water

Conservation District, U.S.A. A detergent was added to give better adherence to the hyacinth leaves. The cost of the spray material averaged about one dollar per lb. of 2,4-D acid. Over the past five years, the field cost was somewhat over 19 dollars per acre of hyacinths sprayed, or about 76 dollars per mile annually. As the control of underwater weeds by chemical means proved too expensive, the canal channels were dragged by an amphibious "duck" at an annual cost of 250 dollars per mile of canal kept practically clear. It is anticipated that the elimination of water weeds will become much less of a problem when the major canals have been excavated to greater depths.

R.T.L.

(699c) The authors outline the methods of determining viability in nematodes, i.e. by direct visual examination, by loss of turgidity, or by inducing movement by stroking or rolling the nematodes or by increasing the oxygen supply. When assaying nematicides it should be remembered that nematodes may be immobilized by unfavourable oxygen supply and temperatures and by residual toxic substances.

M.T.F.

(699d) Attack by *Belonolaimus gracilis* on strawberry plants causes cessation of growth and a gradual decline. The damage occurs in patches which enlarge as the season advances and the nematode numbers increase. Crabgrass and sesbania favour increase in numbers and egg-plant, pepper and okra are also hosts. Fumigation with D-D mixture in the row is satisfactory and rotary tillage has reduced nematode populations. It is suggested that cover crops are also related to nematode build-up.

M.T.F.

(699e) Two pot experiments were carried out in the green-house using Ladino clover grown in different nematode-infested soils. In the first, MC-2 was used to fumigate Red Bay fine sandy loam containing *Pratylenchus brachyurus*: Ladino clover was sown in October and clipped five times between January and August. Dried weights of clippings showed the yields from fumigated pots to be significantly higher than from controls at the last three clippings and when sampled in June the fumigated soil contained an average of 0.7 meadow nematodes per 150 gm. compared with 82.9 in the control. The control plants showed loss of vigour, yellowing of leaves and necrotic root lesions. In the second experiment Arredondo fine sand was fumigated with D-D and Ladino clover was sown and subjected to four treatments: (i) addition of 1,000 *Belonolaimus gracilis* per pot, (ii) *Sclerotinia sclerotiorum* suspension, (iii) nematodes plus sclerotinia fungus, (iv) control. Effects of the treatments were again estimated by means of clippings. These showed that the nematodes are capable of severely injuring the roots of Ladino clover and causing reduced yields. Injury was slightly greater in the presence of *S. sclerotiorum* but the fungus is of little importance either in association with the nematodes or alone.

M.T.F.

(699f) From an examination of the nematodes associated with grass roots in 60 samples of turf collected in various parts of Florida it appears that most damage is caused by *Belonolaimus gracilis*, *Hoplolaimus coronatus* and *Rotylenchus* spp. Damage takes the form of root lesions of several kinds and chlorosis.

M.T.F.

(699g) Two nematicides were applied to turf containing large numbers of *Rotylenchus* spp. and smaller numbers of *Hoplolaimus coronatus* and other plant-parasitic nematodes. The materials were VC<sub>1</sub>-13 (O-2,4-dichlorophenyl O, O-diethyl phosphorothioate) and Nemakril ( $\beta$ -propiolactone derivative). The effects were estimated by the numbers of nematodes obtained by Baermann funnel extraction. Nemakril drastically reduced the nematode population when used as a drench or injected at 15 or 30 gal. per acre. VC<sub>1</sub>-13 was efficient when injected. Neither material showed phytotoxicity. For nematode control in turf, routine fumigation several times a year would be necessary.

M.T.F.

(699h) Injections of Nemakril (a derivative of beta-propiolactone) were made at the rate of 24.2 gal. per acre to a depth of 6 in. at 12 in. intervals into a bowling green where the turf, consisting of common Bermuda grass, was in a serious state of decline. Moderate to heavy populations of *Belonolaimus gracilis*, *Hemicyclophora* sp., *Helicotylenchus* sp. and

*Hoplolaimus coronatus* were present. The treatment was followed by the normal turf maintenance programme. Four months later only small numbers of the nematodes were present and the grass was growing well. A second application of Nemakril was given as a drench and two weeks later very few parasitic nematodes were found. It is considered that the nematode population of turf may be reduced sufficiently by Nemakril to enable the grass to recover and flourish.

M.T.F.

(699i) In a survey of the plant-parasitic nematodes found associated with citrus roots in Florida four are considered true parasites of citrus, viz., *Radopholus similis*, *Tylenchulus semi-penetrans*, *Belonolaimus gracilis* and *Pratylenchus pratensis*. The symptoms of spreading decline due to *R. similis* are given. *T. semi-penetrans* causes unthriftness but may also be found on apparently healthy trees. The sting nematode, *B. gracilis*, may be of economic importance but the extent of damage due to it is not clear. No specific decline has been associated with *P. penetrans* but it is a true endoparasite. Of the other 9 plant-parasitic nematodes found, none is considered an important parasite of citrus.

M.T.F.

(699j) The burrowing nematode, *Radopholus similis*, infests a number of hosts besides citrus. It is pointed out that the nematode may be spread on infested ornamental plants and that attempts to eradicate it may be frustrated by the presence of weeds or other plants on which it can survive.

M.T.F.

## 700—Proceedings. United States Livestock Sanitary Association.

- a. SPINDLER, L. A. & ANDREWS, J. S., 1954.—“The swine kidneyworm, *Stephanurus dentatus*.” 58th Annual Meeting (1954), pp. 296–302.
- b. UNITED STATES LIVESTOCK SANITARY ASSOCIATION, 1954.—“Report of Committee on Parasitic Diseases.” 58th Annual Meeting (1954), pp. 303–308.

(700a) The main facts relating to the life-cycle, geographical distribution, prevalence, economic losses and methods of control of *Stephanurus dentatus* are succinctly summarized from recent literature.

R.T.L.

(700b) The total annual losses from internal parasites in live stock and poultry in the United States was estimated by the U.S. Department of Agriculture on the basis of a ten-year period (1942–1951) at about 430 million dollars. The Committee on Parasitic Diseases of the U.S. Livestock Sanitary Association is of opinion that this is an underestimation. It is pointed out that the financial losses do not necessarily fall on the farmer alone but on the nation as a whole. Loss of value and percentage of production from internal parasites are tabulated separately for cattle, sheep, pigs and poultry.

R.T.L.

## 701—Publicaciones del Instituto de Biología Aplicada. Barcelona.

- a. GADEA, E., 1954.—“Nematodos dulceacuícolas de la Sanabria.” 18, 133–150. [English summary p. 149.]

(701a) In 16 samples from rivers, lakes and pools taken in the Sanabria region of northwest Spain, Gadea found 21 species of nematodes of which the most frequent were *Monhystera filiformis* (40%), *Tripyla setifera* (16%), *Actinolaimus macrolaimus* (7%), *T. filicaudata* (5%) and *M. vulgaris* (4%). Three species are recorded for the first time from Spain, namely, *Trilobus pellucidus*, *Plectus tenuis* and *Teratocephalus palustris*. These are illustrated.

M.T.F.

## 702—Publicações Avulsas do Instituto Aggeu Magalhães. Recife.

- a. BARBOSA, F. S. & COELHO, M. DE V., 1954.—“Infestação natural de *Didelphis paraguayensis paraguayensis* (Marsupialia, Didelphidae) por *Schistosoma mansoni* em Pernambuco.” 3, 1–3. [English summary p. 2.]
- b. COELHO, B., 1954.—“Histopatologia da esquistossomose mansônica natural em *Rattus rattus frugivorus*.” 3, 5–37. [English summary p. 15.]
- c. COELHO, M. V., 1954.—“Ação das formas larvárias de *Schistosoma mansoni* sobre a reprodução de *Australorbis glabratus*.” 3, 39–50. [English summary pp. 48–49.]

- d. BARBOSA, F. S. & COELHO, M. V., 1954.—“Qualidades de vetor dos hospedeiros de *S. mansoni* no nordeste do Brasil. Iº Susceptibilidade de *A. glabratu*s e *T. centimetralis* à infestação por *S. mansoni*.” **3**, 55–62. [English summary p. 61.]
- e. OLIVIER, L., BARBOSA, F. S. & COELHO, M. V., 1954.—“The influence of infection with *Schistosoma mansoni* on survival of *Australorbis glabratu*s.” **3**, 63–71. [Portuguese summary p. 69.]
- f. BARBOSA, F. S., COELHO, M. V. & DOBBIN, Jr., J. E., 1954.—“Qualidades de vetor dos hospedeiros de *S. mansoni* no nordeste do Brasil. II. Duração da infestação e eliminação de cercárias em *A. glabratu*s.” **3**, 79–92. [English summary pp. 90–91.]
- g. COUTINHO, E. M., 1954.—“Estudo histológico das lesões hepáticas e pulmonares verificadas antes da oviposição e nas infestações por um só sexo de *Schistosoma mansoni*.” **3**, 93–110. [English summary pp. 106–107.]
- h. MAGALHÃES NETO, B., MORAES, J. G. DE & FRANÇA, J. T. DE, 1954.—“Um método de dosagem do cobre na água tratada pelo sulfato cíprico.” **3**, 123–129. [English summary p. 129.]

(702a) Two out of ten opossums, *Didelphis paraguayensis paraguayensis*, were found naturally infected with *Schistosoma mansoni* at Pernambuco, Brazil. This is stated to be the first report of *S. mansoni* in a didelphid.

M.MCK.

(702b) In 21 *Rattus rattus frugivorus* naturally infected with *Schistosoma mansoni*, pseudotubercles were found chiefly in the liver, pancreas and mesenteries and, less commonly, in the lungs and intestinal wall. Dead worms frequently caused extensive inflammatory lesions in the lungs and there were necrotic areas in the liver associated with the presence of dead worms in intrahepatic branches of the portal vein. The predominance of chronic lesions with extensive fibrous cirrhosis in some rats suggested the possibility of a spontaneous cure in these animals. The manner in which the schistosome eggs escaped into the intestinal lumen recalls that described in 1945 by Tôrres & Pinto for the armadillo [for abstract see Helm. Abs., **14**, No. 433i].

M.MCK.

(702c) *Australorbis glabratu*s, when naturally or experimentally infected with *Schistosoma mansoni*, lay significantly fewer eggs and egg masses than do healthy snails. In ten days, 15 naturally infected snails produced 430 eggs whereas 15 healthy snails, collected at the same time, laid 1,854. Twelve snails of about two months old were infected with five miracidia each. After the first appearance of cercariae, four laid no more eggs and after another five weeks the others practically ceased to do so. The controls continued to lay during the ten weeks they were kept under observation. The egg masses of the infected snails were smaller and their eggs hatched in significantly lower percentages. The mortality during the first nine days of life in young snails produced by infected snails was 1·76% of 568, whereas that of those from healthy snails was 0·26% of 1,134; but in young snails which had attained the age of 30 days the mortality rates were not significantly different. Parasitic castration did not occur in spite of the severe inhibition of reproduction.

M.MCK.

(702d) Among snails collected from various parts of Brazil which are important endemic areas for *Schistosoma mansoni*, only 0·04% of 33,461 *Tropicorbis centimetralis* were infected as compared with 8·79% of 14,499 *Australorbis glabratu*s. From field specimens of *T. centimetralis* and *A. glabratu*s, Barbosa & Coelho selected those which were apparently free from schistosome infection after observation for about 30 days. The two species were then exposed, together or separately, to about ten miracidia per snail. Only 6·3% of 344 *T. centimetralis* were parasitized after 28–36 days [the summary erroneously states 16·3%], whereas 57·4% of 263 *A. glabratu*s were infected. The miracidia used came from a patient living in an area where *T. centimetralis* was the vector. It is concluded that *T. centimetralis* is less susceptible to infection by *S. mansoni* than *A. glabratu*s.

M.MCK.

(702e) Of the 89 *Australorbis glabratu*s collected in June from a pool in Pernambuco, none had a *Schistosoma mansoni* infection. In August, one in 257 and in September 81 out of 145 were found parasitized. When the pool was reduced to wet mud in October and November

no infections were found in the several hundreds of snails collected. In the laboratory *A. glabratus* were maintained out of water at a relatively high humidity. In a typical experiment 14 infected and 15 uninfected snails were kept in an unglazed clay jar at 27°C. and about 90% humidity for 28 days. In most cases half or more of the infected snails were dead within 15 or 20 days, or at least by the 30th day, but nearly all of the healthy snails survived. After 20-30 days the deaths in the originally infected group were no more frequent than in the uninfected group.

M.MCK.

(702f) Fifty *Australorbis glabratus* with natural infections of *Schistosoma mansoni* were placed in aquaria accessible to tropical sunlight all day and were observed for a week. They released most of their cercariae between 11 a.m. and 5 p.m. each day, with maximum eliminations about 1 p.m., followed by a sharp decline between 3 p.m. and 5 p.m. Average figures on one day were: 3,100 cercariae per snail between 11 a.m. and 1 p.m.; 1,600 between 1 p.m. and 3 p.m. and 450 between 3 p.m. and 5 p.m. Twelve snails, infected individually with five miracidia and receiving two hours of sunshine daily, eliminated increasing numbers of cercariae until about the fifth week, when individual eliminations ranged from 35,800 to 74,600. One snail eliminated 17,600 cercariae in a day; in several instances, 10,000 were released per day for several successive days. That these are higher figures than have been recorded previously is probably attributable to the tropical heat and glare. Infection killed nearly all the snails within one day to five months. No sudden decline occurred in the number of cercariae released before death as observed by Faust & Hoffman in 1934 [for abstract see Helm. Abs., 3, No. 249b]. Seven snails recovered spontaneously.

M.MCK.

(702g) Lesions caused by *Schistosoma mansoni* in the absence of eggs were observed in the livers and lungs of 26 guinea-pigs, one agouti, *Dasyprocta aguti*, and one marmoset, *Callithrix* sp. Nine of the guinea-pigs were infected with male worms only and were killed and examined 41-150 days after infection. The other animals harboured immature flukes. Without exception the lesions were attributable to dead worms or mechanical disturbances resulting from the blockage of vessels.

M.MCK.

(702h) Magalhães Neto *et al.* describe a method for the determination of copper in water, for use in the field when applying soluble copper molluscicides. The method was based on a comparison of the optical density of a test solution with those of standard solutions containing 2 p.p.m. to 100 p.p.m. of copper. The test solution was prepared with 10 ml. of the unknown copper solution, 5 ml. of ammonium hydroxide (1:5) and 5 ml. of 1% sodium diethyldithiocarbamate solution. This was shaken and allowed to stand for 15 minutes before comparison was made with the standard solutions. These were prepared similarly to the test solution and contained copper in the form of copper sulphate. All preparations and comparisons were made in test-tubes of 25 mm. in diameter and a blue filter aided the comparison of the yellow solutions. The steps that may have to be taken to eliminate interference from iron or discolouration due to organic matter are described.

M.MCK.

### 703—Publications de l'Institut Belge pour l'Amélioration de la Betterave.

a. SIMON, M., 1954.—“L'étude du rapport entre le pH du sol et les nématodes.” 22 (3), 85-99. [English & Flemish summaries pp. 88-89.]

(703a) A review of the English literature on the relationship between soil pH and the potato-root eelworm, *Heterodera rostochiensis*, is given. Observations in Belgium on the sugar-beet eelworm *H. schachtii* in relation to soil pH are described. After examining many soil samples, Simon concludes that the proportion of highly infested fields increases with increase in alkalinity. Below pH 6.7 there is little infestation.

H.R.W.

**704—Report of the Department of Agricultural and Stock, Queensland.**

a. MULHEARN, C. R., 1954.—“Division of Animal Industry. Veterinary Services Branch.” Year 1953–54, pp. 60–64.

(704a) During 1953–54, good seasonal conditions in Queensland increased worm populations principally in calves and sheep in all areas. During the summer, heavy loss in sheep was due to *Haemonchus contortus*. *Oesophagostomum* and *Dictyocaulus* were more prevalent than in the previous year. Considerable losses from tapeworms were reported from individual properties. R.T.L.

**705—Report. Director of Veterinary Services, Kenya.**

a. HAMMOND, R. A., 1954.—“General zoology. Helminths.” Year 1954, pp. 60–61.

(705a) From extensive tests on poultry in Kenya, carbon tetrachloride proved extremely effective against *Ascaridia* and *Raillietina echinobothrida* when the dose used was at the rate of 4 c.c. per kg. body-weight. This high dosage necessitated individual weighing and the use of a rubber tube to avoid accidents. Dilution of the carbon tetrachloride with liquid paraffin was neither safer nor more effective and was more troublesome to administer. A high mortality due to heavy worm infections mostly with *Haemonchus* occurred among goats traversing the Garissa-Mombasa stock route. R.T.L.

**706—Reports on the Progress of Applied Chemistry.**

a. PETERS, B. G., 1954.—“Control of plant nematodes.” **39**, 721–726.

(706a) This review of recent progress on the control of plant nematodes summarizes the publications of 29 authors, during 1953–1954, under the headings: treatment of plants, soil fumigation, principles and techniques, and new nematicides. R.T.L.

**707—Report of the Rothamsted Experimental Station.**

a. PETERS, B. G., 1954.—“Nematology Department.” Year 1954, pp. 96–102.

(707a) Work on nematodes carried out during 1954 is reported under the following headings: materials and methods; eelworm population changes of *Heterodera schachtii*, *H. major* and *H. rostochiensis*; host-parasite relationships of *Meloidogyne* spp., *Ditylenchus dipsaci*, *H. major*, *H. rostochiensis*, *H. tabacum*, *H. cruciferae*, *Rhabditis* sp. and *Hoplolaimus uniformis*; root diffusate problems; eelworm physiology; control measures by hot-water treatment and chemicals. J.B.G.

**708—Revista de la Asociación Médica Argentina.**

a. CASIRAGHI, J. C., 1954.—“Las ictericias en las equinococosis hepáticas.” **68** (775/776), 240–241.  
 b. BAZTERRICA, E., POGGI, D. A. & BOUZAS, J. A., 1954.—“Quiste hidatídico abierto en las vías biliares. Coledocistomia. Curación.” **68** (775/776), 265–266.  
 c. ADDEO, E. C., 1954.—“Quiste hidatídico complicado.” **68** (775/776), 269–271. [Discussion p. 271.]

**709—Revista da Associação Médica Brasileira.**

a. VELOZO, H. A., 1954.—“Novo metodo de aplicação de molusquicida no controle da esquistosomiasis.” **1** (2), 151–155. [English summary p. 155.]  
 b. FIORILLO, A. M., JAMRA, M., ESTON, V. R., ESTON, T. E. & PAGANO, C., 1954.—“Volemia na forma hepato-esplenica da esquistossomiasis mansoni.” **1** (2), 173–175. [English summary p. 175.]

(709a) In the laboratory the lethal effect of copper sulphate on *Australorbis glabratus* depended more on agitating the solution than on its concentration. To agitate mud, water and vegetation in the field a 1:1,000 solution was applied through nozzles at pressures up

to 300 lb. per sq. in. The method was tested over 63,157 sq. m. of marshes at Caratinga, Brazil, at a cost, for materials and wages, of 16,857 Brazilian cruzeiros. The mortality of *A. glabratu*s was 100% and no live snails appeared for nearly 150 days. The equipment is described and its use illustrated by photographs.

M.MCK.

(709b) Blood volume determinations, using Evans blue (T-1824) and radioactive phosphorus ( $P^{32}$ ), were made on 11 white patients with the hepato-splenic form of *Schistosoma mansoni* infection. As compared with normal values recorded in the literature there was, in all the patients, an increase in the volume of plasma and total blood, a slight decrease in the actual erythrocyte volume but no decrease in the erythrocyte volume considered per kg. body-weight.

M.MCK.

### 710—Revista da Associação Médica de Minas Gerais.

a. MOTA, J. N. DA, 1954.—“Tumor do ceco por esquistossomose.” 5 (1/2), 69-70.

### 711—Revista Brasileira de Gastroenterologia.

a. ALMEIDA REYS, J. DE, 1954.—“Biopsia retal e a cura da esquistossomose mansoni (doença da Manson—Pirajá da Silva).” 6 (4), 479-484. [English summary p. 484.]  
 b. COUTINHO, A. B., 1954.—“Objeções à prática do chamado ‘tratamento específico’ da esquistossomose mansoni.” 6 (4), 485-510.

(711a) Almeida Reys reviews the features which recommend rectal biopsy as the method of choice for diagnosing schistosome infections and gives quotations of relevant matter by other authors.

M.MCK.

(711b) At the Congress on schistosomiasis mansoni in São Paulo in 1952, Coutinho opposed the specific treatment of schistosomiasis because the blockage of vessels by dead worms can be far more serious than the chronic disease and may even cause death. His arguments are illustrated with examples and followed by questions put to him and his answers.

M.MCK.

### 712—Revista Brasileira de Malariologia e Doenças Tropicais.

a. RACHOU, R. G., FERREIRA, M. O. & LIMA, M. M., 1954.—“Resultados preliminares de uma prova de campo para comparação da eficácia de 3 inseticidas de ação residual aplicados no interior das casas para combate ao *Culex fatigans*.” 6 (2), 159-172. [English summary p. 163.]  
 b. RACHOU, R. G., FERREIRA, M. O. & LIMA, M. M., 1954.—“Inquérito de filariose bancroftiana em Florianópolis, Capital do Estado de Santa Catarina.” 6 (2), 189-204. [English summary p. 195.]  
 c. RACHOU, R. G., DEANE, L. M., DAMASCENO, R. G. & LIMA, M. M., 1954.—“Relação entre a microfilaremia horária da *Wuchereria bancrofti* e a freqüência domiciliária horária do *Culex fatigans* no norte e no sul do Brasil.” 6 (2), 205-218. [English summary p. 207.]

(712b) Microfilariae of *Wuchereria bancrofti* were present in the night blood of 1·4% of 3,663 people in Florianópolis, Brazil. The infection is autochthonous. Of 1,302 female *Culex fatigans* caught in the houses, 2·4% were found to be infected and 0·5% to contain infective larvae.

M.MCK.

(712c) In 100 persons with *Wuchereria bancrofti* infection in the northern town of Belém, Brazil, the microfilarial density was highest between 1 a.m. and 3 a.m., whereas in eight persons in the southern town of Florianópolis the peak density was between 4 a.m. and 6 a.m. The records of mosquito captures made inside houses by Deane (1951) in Belém and by Rachou (1954) in Florianópolis, show that the difference in the times of highest microfilarial densities is correlated with the entry of female *C. fatigans* into the houses; this occurred just before the peak microfilarial densities and between 10 p.m. and midnight in Belém and 1 a.m. and 3 a.m. in Florianópolis.

M.MCK.

## 712—Revista Brasileira de Malaria e Doenças Tropicais. (cont.)

- d. DEANE, L. M., RACHOU, R. G., LACERDA, N. B. & MARTINS, J. S., 1954.—“Alguns dados relativos à prevalência da *Mansonella ozzardi* no Brasil.” **6** (2), 219–224. [English summary p. 222.]
- e. ALBUQUERQUE NEVES, H. DE & SCAFF, L. M., 1954.—“Comprovação da microfilaremia congênita de *Wuchereria bancrofti*.” **6** (2), 283–284. [English summary p. 284.]
- f. RACHOU, R. G., GARCIA, W. & MARTINS, J. S., 1954.—“Do diagnóstico diferencial entre as microfilarias de *Wuchereria bancrofti* e de *Mansonella ozzardi*.” **6** (2), 289–293. [English summary p. 293.]
- g. LUCENA, D. T. DE, 1954.—“Morfologia geral dos moluscos planorbídeos.” **6** (3), 311–325. [English summary p. 325.]
- h. PAULINI, E., 1954.—“O planorbicida: pentachlorofenol.” **6** (3), 333–341. [English summary pp. 340–341.]
- i. RACHOU, R. G. & LACERDA, N. B., 1954.—“Da variação horária da microfilaremia de *Mansonella ozzardi*.” **6** (3), 343–348. [English summary p. 346.]
- j. RACHOU, R. G., 1954.—“Variação horária (periodicidade) da microfilaremia de *Wuchereria bancrofti* em Santa Catarina.” **6** (3), 349–356. [English summary p. 354.]

(712d) In six towns or villages in three municipalities on the forest plains of the Amazon, west of Manaus, *Mansonella ozzardi* was the only microfilaria found during the examination of the night blood of 3,512 inhabitants. The highest incidence was 28·6% in Maria Açu and the lowest was 4·6% in Benjamin Constant. The over-all incidence of 9·5% affected Negroes, Whites and those of Indian origin. One person had 1,060 microfilariae in 20 cu. mm. of blood.

M.MCK.

(712e) Fourteen out of 436 samples of placental blood and three out of 436 samples from the umbilical cord, taken in Belém (Pará), Brazil, contained microfilariae of *Wuchereria bancrofti*. The positive samples were all from women whose children had been born during the night.

M.MCK.

(712f) Rachou *et al.* give a key to the microfilariae of *Wuchereria bancrofti*, *W. malayi*, *Loa loa*, *Mansonella ozzardi*, *Onchocerca volvulus*, *Acanthocheilonema perstans* and *A. streptocerca*. The absence of a sheath in *M. ozzardi* does not reliably distinguish it from *W. bancrofti*, which is occasionally unsheathed. The two can be differentiated by size, *M. ozzardi* being about two-thirds as long and half as wide as *W. bancrofti*, by the tail tip, which in *M. ozzardi* is more pointed, and by the small, elongate and crowded somatic nuclei which in *M. ozzardi* reach within 4 $\mu$  of the tail end, while in *W. bancrofti* these nuclei are longer, round and scattered, reaching within 15 $\mu$  of the tail end. The posterior terminal nuclei, which from a column in both species, are preceded in 95% of *W. bancrofti* embryos by a pair of obliquely disposed nuclei.

M.MCK.

(712h) The physical, chemical and biological properties of pentachlorophenol, the methods for its industrial preparation, determination in water and its application in the field are reviewed. The cost of the active dose of four molluscicides in 1,000 cu. m. of water, calculated in Brazilian currency (cruseiros) is: lime, 1,200–2,000; copper sulphate, 240; dinitro-cyclohexylphenol, 350; pentachlorophenol, 120–240.

M.MCK.

(712i) Blood samples taken hourly for 24 hours from each of 47 carriers of *Mansonella ozzardi* in the Amazon region showed no microfilarial periodicity.

M.MCK.

(712j) Eight individuals infected with *Wuchereria bancrofti* in Florianópolis, Brazil, were examined hourly for 24 hours for microfilariae. These showed a nocturnal periodicity, with a higher density in the second half of the night (with a maximum at 4 a.m. or 5 a.m.) than in the first half. Although the density between 7 p.m. and 11 p.m. was 50% lower than that between 4 a.m. and 7 a.m., the former period was selected as a more convenient time for obtaining samples for epidemiological indices.

M.MCK.

## 712—Revista Brasileira de Malariologia e Doenças Tropicais. (cont.)

- k. ALBUQUERQUE NEVES, H. DE, 1954.—“Da pesquisa de microfilárias de *Wuchereria bancrofti* pela escarificação da pele.” **6** (3), 365–366. [English summary p. 366.]
- l. NEVES, H. A. & DAMASCENO, R. M. G., 1954.—“Incidência da filariose bancroftiana no Território Federal do Amapá, segundo inquéritos realizados em 1952 e 1953.” **6** (3), 367–375. [English summary p. 370.]
- m. RACHOU, R. G. & DEANE, L. M., 1954.—“Filarioses humanas no Brasil. Conhecimento atual de sua distribuição geográfica e transmissão.” **6** (3), 377–387. [English summary p. 382.]
- n. RACHOU, R. G., 1954.—“Da falta de correlação entre a periodicidade das microfilárias de *Wuchereria bancrofti* e o nascer e o ocaso do sol no norte e no sul do Brasil.” **6** (3), 395–405. [English summary p. 396.]
- o. RACHOU, R. G., LACERDA, N. B. & COSTA, A., 1954.—“Primeiros inquéritos de filariose no Território do Acre.” **6** (3), 407–408. [English summary p. 408.]
- p. RACHOU, R. G., LACERDA, N. B. & SANTOS, D., 1954.—“Inquérito hemoscópico para pesquisa de microfilárias em Boa Vista, Capital do Território do Rio Branco.” **6** (3), 409–410. [English summary p. 410.]

(712k) From each of 31 carriers of *Wuchereria bancrofti* in Belém (Pará), Brazil, a digital blood sample and two lymph samples (one from scarification of the ear lobe and the other of the interscapular region) were collected twice daily between 7 a.m. and 11 a.m. and between 7 p.m. and 11 p.m. Contrary to Berghe & Chardome's opinion [for abstract see Helm. Abs., 20, No. 165a] that skin scarification is an easy and accurate way of detecting microfilariae, no microfilariae were found in the lymph but were present in blood from all the carriers [the English summary states 94% of the carriers].

M.MCK.

(712l) The examination of the night blood of 5,754 of the 12,946 residents in the towns of Macapá, Mazagão, Amapá, Oiapoque and the military frontier post of Clevelândia, in the Brazilian territory of Amapá, revealed microfilariae of *Wuchereria bancrofti* in 0.9%. All of those infected had lived in Belém (Pará). Of 2,971 female *Culex fatigans* captured in the five localities, 0.4% contained larvae of *W. bancrofti*. The infection is not considered serious. M.MCK

(712m) Infection of *Wuchereria bancrofti* is found principally along the coast in Brazil and is known to be autochthonous in Manaus, Belém (Pará), Vigia, Bragança (Pará), Cametá, Recife, Maceió, Salvador, Florianópolis, Ponta Grossa and Pôrto Alegre. Hetrazan is being tested against the parasite at the rate of 6 mg. per kg. body-weight per day for 7, 10, 15 or 21 days. These courses of treatment were given, respectively, to 184, 186, 159 and 17 infected persons. Immediately after treatment the incidence of microfilariae dropped to 25%, 26.3%, 7.6% and 5.9% in the four groups and, six months later, 37% of the first group and 34.6% of the second were positive. *Mansonella ozzardi* seems to be confined to the forested plains of the upper Amazon region and is endemic in Manaus, Tefé, Fonte Boa, São Paulo de Olivença, Benjamin Constant, Remate de Males, Maria Açu and Ataláia. The vector of *W. bancrofti* is *Culex fatigans*. Infective larvae have been found in Brazil in *Anopheles darlingi* and *A. aquasalis* (=*A. tarsimaculatus*) and have been produced experimentally in *A. albitalis* and *Mansonia justamansonia*. The vector of *M. ozzardi* in Brazil is not known.

M.MCK.

(712n) The peak number of microfilariae of *Wuchereria bancrofti* found in the blood of carriers in Belém, in the north of Brazil, is at about 1 a.m. and in Florianópolis, in the south, is at 4 a.m.; this bears no relation to the times of sunrise and sunset. This was ascertained from the microfilarial counts taken during the first two months and the last seven months of the year in 100 carriers in Belém, and in three carriers during February and five during August in Florianópolis.

M.MCK.

(712o) Samples of the night blood of 3,430 people in the towns of Rio Branco, Brasília, Cruzeiro do Sul and Xapuri, in the territory of Acre, Brazil, showed only one instance of microfilarial infection and this was of *Wuchereria bancrofti*, originating from Belém (Pará).

M.MCK.

(712p) Two instances of *Mansonella ozzardi* infection were found in 837 persons in Boa Vista, Brazil, but neither was considered to be autochthonous.

M.MCK.

**712—Revista Brasileira de Malariologia e Doenças Tropicais. (cont.)**

- q. RACHOU, R. G., AZAMBUJA, C. E. A. & SOUZA, P. S., 1954.—“Comprimento e largura das microfilárias de *Mansonella ozzardi* e de *Wuchereria bancrofti* no Brasil.” **6** (3), 419-427. [English summary pp. 423-424.]
- r. ROMEIRO, L. & AGUIAR, H., 1954.—“A influência do teor em cálcio do criadouro sobre um planorbídeo. Nota prévia.” **6** (3), 433-438. [English summary p. 438.]
- s. ANDRADE, R. M. DE, 1954.—“Alguns dados hidroquímicos de criadouros de planorbídeos no Distrito Federal.” **6** (4), 473-475. [English summary p. 475.]
- t. RACHOU, R. G., LÔBO, A. G. S. & MARTINS, J. S., 1954.—“Primeiras investigações do Serviço Nacional de Malária relativas à incidência da filariose bancroftiana no Estado do Paraná.” **6** (4), 477-479. [English summary p. 478.]
- u. RACHOU, R. G., LACERDA, N. B. & COSTA, A., 1954.—“Inquérito hemoscópico para pesquisa de microfilárias em Pôrto Velho, Capital do Território do Guaporé.” **6** (4), 501-503. [English summary p. 502.]
- v. RACHOU, R. G., 1954.—“Variação diária da microfilaremia de *Wuchereria bancrofti* em 27 portadores observados durante vinte e oito dias seguidos.” **6** (4), 505-517. [English summary p. 509.]

(712q) In 200 microfilariae of *Mansonella ozzardi* from several carriers in São Paulo de Olivença and Fonte Boa in the State of Amazonas, the range of lengths,  $150\mu$  to  $244\mu$ , was greater than that ( $173\mu$  to  $240\mu$ ) reported in the literature. The average width of  $2.9\mu$  (minimum width  $2.6\mu$ ) was less than the minimum of  $4\mu$  hitherto recorded. In 200 microfilariae of *Wuchereria bancrofti* from Belém in northern Brazil and 200 from Florianópolis in southern Brazil, the maximum length of  $408\mu$  surpassed the maximum of  $320\mu$  hitherto known and the minimum width was only  $5\mu$ , as compared with  $7.5\mu$  previously recorded. The microfilariae of *W. bancrofti* from northern Brazil were on the average slightly longer and narrower, and the sheath slightly shorter, than those from southern Brazil. M.MCK.

(712r) From quantitative determinations of the calcium content of the shells of *Australorbis tenagophilus* and of the water and mud in which they were breeding in and around Rio de Janeiro, it is concluded that the chemical composition of the mud, as well as that of the water, must be considered in drawing conclusions on the biology of these snails. M.MCK.

(712s) In 161 out of 279 collections of water where planorbids were found in the Federal District of Rio de Janeiro, the incidence and the density of the snail populations increased with the hardness of the water. Snails were present in a pH range of 4 to 9 and a maximum chloride content of 2,562 p.p.m. M.MCK.

(712t) Contrary to expectation after systematic inquiries among local practitioners, no infections with *Wuchereria bancrofti* were found among 8,658 persons (31% of the population) in ten localities in the State of Paraná, Brazil. M.MCK.

(712u) At Pôrto Velho, Guaporé, Brazil, six out of 1,400 people had microfilariae which, although unsheathed, were identified as those of *Wuchereria bancrofti* on the basis of the distribution of the somatic nuclei and on the fact that five of the cases came from Belém (Pará), where *W. bancrofti* is the only known species. M.MCK.

(712v) The night blood of 27 individuals with *Wuchereria bancrofti* infections in Santa Catarina, Brazil, was examined for 28 consecutive days. On no occasion were all the 27 positive. Only ten were positive for 28 days and three people were negative for eight consecutive days. The total daily count of microfilariae varied from 340 to 619. Rachou notes that in haematoscopic surveys the lower the incidence of filarial infections the higher is the number overlooked. M.MCK.

## 712—Revista Brasileira de Malariologia e Doenças Tropicais. (cont.)

- w. RACHOU, R. G., FERREIRA, M. O. & LIMA, M. M., 1954.—“Investigações relativas à incidência da filariose bancroftiana na Ilha de Santa Catarina.” **6** (4), 519–523. [English summary p. 521.]
- x. ALBUQUERQUE NEVES, H. DE & SCAFF, L. M., 1954.—“Filarioses nas unidades militares sediadas na Amazônia.” **6** (4), 533–540.
- y. LÔBO, A. G. S., LUZ, E. & GAMA, E. S., Jr., R. DA, 1954.—“Inquérito preliminar sobre planorbídeos realizado na cidade de Jacarézinho, Paraná.” **6** (4), 541–544.
- z. LÔBO, A. G. S. & LUZ, E., 1954.—“Contribuição ao conhecimento da distribuição geográfica dos planorbídeos no Estado do Paraná.” **6** (4), 545–554.
- ba. LÔBO, A. G. S., LUZ, E. & CONSOLIN, J., 1954.—“Novos focos de esquistossomose mansônica no Estado do Paraná.” **6** (4), 555–565.
- bb. DIAS, E., 1954.—“Incidência da esquistossomose mansoni e outras helmintoses no Município de Bambuí, Minas Gerais.” **6** (4), 601–605.

(712w) In surveys of 13,340 inhabitants in 28 localities throughout the Island of Santa Catarina, Brazil, infections of *Wuchereria bancrofti* have been found at Ponta Grossa, Florianópolis, Canasvieiras, Itacorobi, Lagoa and Ingleses. The incidence was low, except in Ponta Grossa, where 17 out of 122, and in part of Florianópolis, where 3·4%, were positive. Mosquito surveys in Ponta Grossa, Florianópolis and Pirajubaé revealed infections in *Culex fatigans* only.

M.MCK.

(712x) The incidence of microfilariae was determined at night in eleven naval, military and air force establishments in the Amazon region of Brazil. The highest numbers were among 650 civilian staff and their families at Belém (Pará), of whom 21% had *Wuchereria bancrofti*, at the military post of Tabatinga where three had *W. bancrofti* and 18 had *Mansonella ozzardi*, at the military post of Ipiranga where 21 out of 105 had *M. ozzardi*, and among 1,223 recruits, of whom 11·3% were infected with *W. bancrofti*. The infections of the military staff had apparently been missed in the routine examination for acceptance into the army.

M.MCK.

(712y) Planorbids were found in 1,048 out of 7,975 places in and around Jacarézinho, a focus of schistosomiasis in the State of Paraná, Brazil. 1,568 were identified as *Australorbis glabratus olivaceus*, 316 as *Tropicorbis stramineus (centimetralis)*, 175 as *Drepanotrema cultratum*, 77 as *A. bahiensis* and three as *Gyraulus schubarti*. Schistosome cercariae were found in 10 out of 1,387 *A. glabratus olivaceus*, apparently the only species thus infected. Other cercariae were found in *A. glabratus olivaceus* and *D. cultratum*.

M.MCK.

(712z) From the shells of snails collected in 24 municipal areas in the State of Paraná, Brazil, Lôbo & Luz have identified *Australorbis glabratus olivaceus* in 12 localities, *A. bahiensis* in ten, *A. tenagophilus* in three, *Tropicorbis stramineus (centimetralis)* in ten, *Drepanotrema cultratum* in 20 and *Gyraulus schubarti* in two. Their distribution is mapped and tabulated and photographs of the shells are reproduced.

M.MCK.

(712ba) In the State of Paraná, Brazil, new foci of schistosomiasis mansoni were verified by eggs in the stools at Santo Antônio da Platina, in 16 out of 1,300 people and 8 out of 607 schoolchildren; Monte Real, in 49 out of 430 people; Companhia Agrícola Usina Jacarézinho (in the municipal area of Jacarézinho) in 52 out of 653 persons; and at Maticanã, near Uraí, in 11 out of 86. At Uraí, three cases of infection were found and one was autochthonous. Infected *Australorbis glabratus olivaceus*, the only planorbid species with schistosome cercariae, were present in the first four localities.

M.MCK.

(712bb) The results of 4,770 faecal examinations (of which 1,600 have already been published) at the Pôsto do Instituto Oswaldo Cruz, in Bambuí, Minas Gerais, Brazil, were: *Schistosoma mansoni* in 7·8%, *Necator americanus* in 55·1%, *Ascaris lumbricoides* in 38·1%, *Trichuris trichiura* in 7·6%, *Taenia* sp. in 3·6% and *Strongyloides stercoralis* in 3·3%. M.MCK.

**713—Revista Ecuatoriana de Entomología y Parasitología.**

- a. GARCÍA-SOLÓRZA, E. & LEVÍ-CASTILLO, R., 1954.—“Filariasis en el mono *Cebus albifrons aequatorialis* de la Región Litoral del Ecuador (nota previa).” **2** (1/2), 101-104. [English summary p. 103.]
- b. HEINZ, H. J., 1954.—“A case of a tetrarhynchid (cestode) infection in man.” **2** (1/2), 227-230.

(713a) The presence of an unidentified microfilaria in the tissue and blood vessels of the liver of *Cebus albifrons aequatorialis* from the coastal jungle plain of Ecuador and the finding of a typical case of elephantiasis suggest the existence there of undetected filariasis. M.MCK.

(713b) A live tetrarhynchid, identified as the larval stage of *Dibothriorhynchus* sp., is reported to have been passed per anum by a boy, aged 5, while being bathed in a bath tub in Johannesburg. R.T.L.

**714—Revista de la Facultad de Ciencias Médicas de la Universidad Nacional de Córdoba.**

- a. CHENAU, U. A., 1954.—“Frecuencia del *Enterobius vermicularis* en el apéndice cecal de personas adultas de Córdoba.” **12** (2), 221-227.

**715—Revista do Instituto Adolfo Lutz. São Paulo.**

- a. RUGAI, E., MATTOS, E. & BRISOLA, A. P., 1954.—“Nova técnica para isolar larvas de nematóides das fezes. Modificação do método de Baermann.” **14** (1), 5-8. [English summary p. 7.]
- b. RUGAI, E., 1954.—“Contribuição à epidemiologia da esquistosomose mansônica no Estado de S. Paulo.” **14** (1), 9-11. [English summary p. 11.]
- c. CORRÊA, M. O. A., FLEURY, G. C., DUARTE, Y. N. & BUENO, R. A., 1954.—“Considerações sobre alguns aspectos das helmintoses em nosso meio escolar.” **14** (1), 27-31. [English summary p. 31.]
- d. AMATÔ NETO, V. & CORRÊA, M. O. A., 1954.—“Tratamento da enterobiase pelo hidrato de piperazina.” **14** (1), 39-44. [English summary p. 43.]
- e. CARVALHO, J. C., 1954.—“A soja e seus inimigos do solo.” **14** (1), 45-52. [English summary p. 50.]

(715a) Rugai *et al.* describe a modification of the Baermann technique for collecting larvae from faeces. The tin in which the sample arrives is covered with several layers of gauze at the mouth. The tin is inverted and rested in a conical sedimentation glass in a slightly oblique position. Water at 40°C. to 42°C. is poured down the side of the glass until the mouth of the tin is covered. After 90 minutes, without disturbing the tin, the larvae can be recovered with a pipette from the bottom of the glass. M.MCK.

(715b) Five habitats of *Australorbis tenagophilus* are reported from Bauru, Brazil. Rugai examined 1,073 snails. *Cercaria hemiura* was present in two habitats but no *Schistosoma mansoni* cercariae were found. M.MCK.

(715c) From 1943 to 1952 Corrêa *et al.* performed faecal examinations on 55,764 schoolchildren in São Paulo. The children, aged 7-14 years, were from the poorer and middle classes of São Paulo. The helminths most frequently found were *Trichuris trichiura* in 42.83%, *Ascaris lumbricoides* in 40.21% and hookworm in 21.54%. M.MCK.

(715d) Piperazine hydrate was administered in a flavoured syrup containing 250 mg. of the salt per 5 c.c. The dosage was 60 mg. per kg. body-weight daily, given in one or two courses of treatment, each lasting seven days. Twenty-one of the 23 Enterobius patients were cured. M.MCK.

(715e) Four species of root-knot nematode have been found attacking soya beans in São Paulo. They are identified as *Meloidogyne javanica*, *M. arenaria*, *M. incognita* and *M. hapla*. The soya bean variety La 41-1219, which is considered to be susceptible in the southern U.S.A., was slightly resistant to *M. arenaria* in Campinas. The variety Abura was badly attacked by *M. javanica*, *M. arenaria* and *M. incognita* in different districts. In Terra Roxa, soya beans were attacked by *M. hapla*. M.T.F.

**716—Revista del Instituto de Salubridad y Enfermedades Tropicales. Mexico.**

a. AHUMADA, M., MOLINA PASQUEL, C. & MAZZOTTI, L., 1954.—“Tratamiento de las teniasis con Azacrin.” **14** (3), 119-121. [English summary p. 121.]

(716a) The authors describe the treatment of 30 cases of taeniasis with Azacrin, a recently synthesized acridine compound. The maximum total dosage for adults was 700 mg. given as two tablets, each of 100 mg., every five minutes with 0.6 gm. of sodium bicarbonate; children of five years of age received a total of 200 mg. The treatment was successful in 26 of the patients and the drug appeared to be less toxic than meprazine. S.W.

**717—Revista Kuba de Medicina Tropical y Parasitología.**

a. BASNUEVO, J. G., SILVA, A. & DIÉGUEZ LAMAZARES, E., 1954.—“Terapéutica antiparasitaria. Obstrucción intestinal por *Ascaris lumbricoides*. Su tratamiento con dietilen-diamina (uricida o piperacina).” **10** (7/12), 33-37.

b. BASNUEVO, J. G., BORGES, F. & MAÑAS CAO, A., 1954.—“Acción antidiarreica de la mezcla acacia-aluminio-caolín administrada en forma de enemas.” **10** (7/12), 38-41.

c. BASNUEVO, J. G., BLANCO-RABASSA, E., ALONSO-FONTAO, J., SOLER-DEL-GADO, F. & MAÑAS-CAO, A., 1954.—“Terapéutica antiparasitaria. La dietilendiamina (uricida, piperacina) en el tratamiento de la ascariasis y la oxyuriasis.” **10** (7/12), 47-49.

d. CAUSA, A., MILANÉS, F. & LEÓN, P. M., 1954.—“Alteraciones histo-patológicas del hígado en algunas parasitosis. (Estudio clínico-patológico).” **10** (7/12), 50-54.

e. BARQUET CHEDIAK, A., 1954.—“La anemia de la uncinariasis. (Estudio fisiopatogénico).” **10** (7/12), 63-73. [English summary p. 73.]

f. BASNUEVO, J. G., BLANCO RABASSA, E., ALONSO FONTAO, J., MAÑAS CAO, A. & CASANOVA, R., 1954.—“El adipato de piperacina en el tratamiento de la ascariasis y la oxyuriasis.” **10** (7/12), 77-79. [English summary p. 79.]

g. BASNUEVO, J. G. & LOMBERA, L., 1954.—“Fascioliasis hepática curada con cloroquina (Tanakan).” **10** (7/12), 79.

h. BASNUEVO, J. G. & TRILLO, R., 1954.—“Fascioliasis hepática tratada con cloroquina y emetina.” **10** (7/12), 79-80.

i. BASNUEVO, J. G. & MARTÍN, S., 1954.—“Distomatosis hepática por *Fasciola hepatica* tratada con cloroquina y emetina.” **10** (7/12), 80.

j. BASNUEVO, J. G., 1954.—“Manera de administrar los antihelmínticos que no contengan tetracloruro de carbono.” **10** (7/12), 80.

(717c) Basnuevo *et al.* successfully treated with piperazine hexahydrate 36 out of 40 cases of enterobiasis and 51 out of 70 cases of ascariasis. The drug was administered for a period of ten days in a cane-sugar solution at the rate of 0.3 gm. per day per year of age up to ten years, or 3.6 gm. daily to those over ten years or more than 100 lb. in weight. One patient passed 732 Ascaris. M.MCK.

(717d) [This paper is reprinted from *Rev. cubana Lab. clin.*, 1954, 8, 22-29. For abstract see Helm. Abs., 23, No. 47b.]

(717e) [This paper is reprinted from *Arch. Hosp. univ. Habana*, 1953, 5, 485-511. For abstract see Helm. Abs., 22, No. 751a.]

(717f) Ten *Ascaris* patients received piperazine adipate in liquid or in tablet form at the rate of 4 gm. per day. Children less than eight years old received 0.5 gm. daily per year of age. Treatment lasted seven to ten days. Eight patients were cured. Enterobius cases were given, before treatment, an enema of 100 c.c. per year of age of a 1:1,000 solution of hexyl-resorcinol in saline. This caused the evacuation of gravid female worms which could be examined. This treatment, followed by a second enema, cured all four Enterobius cases. No toxic effects were observed. M.MCK.

(717g) Eggs of *Fasciola hepatica* were found in the faeces of a woman from Orozco, Pinar del Río in Cuba. She was cured with chloroquine diphosphate (Tanakan) given at the rate of 1 gm. per day for three days and 0.5 gm. per day for the following 24 days. M.MCK.

(717h) An infection of *Fasciola hepatica* in a woman was cured by administering for 20 days three tablets daily of 0.15 gm. of chloroquine diphosphate (Tanakan) and 0.05 gm. of quinacrine (Ayasol) each. This was followed by four injections of 0.04 gm. of emetine hydrochloride given singly on alternate days after the oral treatment.

M.MCK.

(717i) A 60-year-old woman with digestive disturbances showed eggs of *Fasciola hepatica* in the bile and faeces. The eggs disappeared after treatment with 0.5 gm. of chloroquine diphosphate (Tanakan) per day for 20 days together with seven injections each containing 0.02 gm. of emetine hydrochloride, given singly on alternate days during the same period.

M.MCK.

### 718—Revista Médica Dominicana.

- a. GERMAN OLIVIER, A., 1954.—“La incidencia de filariasis en los pacientes del Hospital Dr. William Morgan.” **9** (2), 69-73.
- b. PICHARDO SARDA, M. E., AUDE NUÑEZ, N. & CARR, H. P., 1954.—“Tratamiento antihelmíntico de la uncinariasis.” **9** (2), 74-89.

(718a) Forty three of 896 patients and 2 of 41 personnel, examined in the Dr. William Morgan Hospital in the Dominican Republic, carried microfilariae all of which were of *Wuchereria bancrofti*. Nearly all the cases were asymptomatic but others suspected of infection were negative to repeated examinations.

M.MCK.

(718b) When the saline purge was omitted tetrachlorethylene was more efficacious in the treatment of hookworm infections and the toxic effects disappeared, permitting an increase in the dosage rate from 3 c.c. to 4 c.c. or 5 c.c. per adult with further increase in its efficiency. The total numbers of worms in each of 59 patients are tabulated with the numbers eliminated by various dosages with or without the purge. Efficiency was not increased by administering the drug (i) in small successive doses, (ii) after a laxative or (iii) by its alternation with hexylresorcinol. About 387,000 patients have been treated by the authors without purging and 53,000 of these received the recommended dosage of 0.06 c.c. of tetrachlorethylene per lb. body-weight, up to a maximum of 5 c.c. per dose. This should be given in gelatin capsules, in the morning, on an empty stomach.

M.MCK.

### 719—Revista de Medicina Veterinaria y Parasitología. Caracas.

- a. WETZEL, R. & VOGELSANG, E. G., 1954.—“Bases biológicas para la lucha antihelmíntica moderna.” **13** (1/4), 3-15.
- b. WETZEL, R. & VOGELSANG, E. G., 1954.—“Helmintiasis intestinal del equino.” **13** (1/4), 17-25.
- c. RÍOS REVEROL, H., 1954.—“Endoparásitos de los caninos (*Canis fam.*) del Estado Aragua (Venezuela).” **13** (1/4), 79-115.
- d. MAYAUDÓN T., H., 1954.—“*Eurytrema pancreaticum* (Giard et Billet 1892) Looss, 1908, su presencia en bovinos (*Bos taurus*) de Venezuela.” **13** (1/4), 175-176.
- e. OLANO VILCHEZ, G., 1954.—“Presencia de *Moniezia expansa* (Rudolphi, 1810) en bovinos de Venezuela.” **13** (1/4), 177-179.

(719a) Wetzel & Vogelsang discuss helminth infections, methods of controlling them and the resistance of domestic animals to them.

M.MCK.

(719b) Wetzel & Vogelsang give a general discussion on strongyles, *Strongyloides* and *Parascaris equorum* in equines and on the control of the parasites. Strongyles produce eggs in spring and early summer in Europe and in July and August in Venezuela.

M.MCK.

(719c) Ríos Reverol lists nine helminths, including *Cysticercus cellulosae*, found in 250 sick stray dogs from the neighbourhood of Maracay in Venezuela. He gives the synonyms and a short discussion of each species. The commonest were *Ancylostoma caninum* in 89.6%

and *Spirocerca lupi* in 59·2%. Twelve photographs illustrate organs (among them the ileum) containing nodules of *S. lupi*. Skin tests for this nematode were conducted on 31 dogs and the results were substantiated at necropsy in 23 dogs and not substantiated in eight. *Heterakis spumosa* was found in one instance together with the remains of a rat.

M.MCK.

(719d) *Eurytrema pancreaticum*, found in cattle, is reported for the first time from Venezuela and is described. It had probably been imported from Brazil.

M.MCK.

(719e) *Moniezia expansa*, not previously recorded in Venezuela, was found in cattle in the State of Zulia.

M.MCK.

## 720—Revista Paulista de Medicina.

a. PRICOLI, T. I., LINDEMBERG, S., FREDERICO, F., FERRAZ, W. G., SOARES, M. A., RODRIGUES, F. S. & RAMOS, L. O., 1954.—“Comportamento de provas de função hepática na esquistosomose mansoni.” **45** (2), 293-297. [English summary p. 297.]

(720a) Liver function tests on 27 unselected cases of schistosomiasis mansoni gave evidence of a functional deficit in protein metabolism, mainly in those with portal hypertension. There were no changes in the blood bilirubin, urine urobilinogen and in the total cholesterol of the blood.

R.T.L.

## 721—Revista de Sanidad y Asistencia Social. Caracas.

a. BENARROCH, E. I. & VILLEGAS J., R., 1954.—“Eficacia comparada del hexilresorcinol y de una mezcla de tetracloretileno y quenopodio en el tratamiento de helmintiasis intestinales.” **19** (3/4), 197-208. [English summary pp. 207-208.]

(721a) The comparative efficacy of a single dose of hexylresorcinol crystoids and of a 3:2 mixture of tetrachlorethylene and oil of chenopodium, in gelatin capsules, was tested on two series of patients, numbering 716 in all, who had infections of *Necator*, *Ascaris* and *Trichuris*, and were from localities in two different regions. The best results, for the three parasites, were obtained with 4 c.c. of the mixture, viz., *Necator* 88%, *Ascaris* 100% and *Trichuris* 66%. 0·6-1 gm. of hexylresorcinol and 2 c.c. to 3 c.c. of the mixture both gave similar results. The rate of cure was *Necator* 69-74%, *Ascaris* 67-73% and *Trichuris* 52-60%. Although the same drug, the same dosage and the same method were followed in the two regions, there were differences in the results which are attributed to unknown local conditions.

R.T.L.

## 722—Revista do Serviço Especial de Saúde Pública. Rio de Janeiro.

a. PEREIRA, O. & MENDONÇA, F., 1954.—“Determinação, por análises químicas, do raio de ação do pentaclorofenolato de sódio em Aguas Correntes.” **6** (2), 425-432. [English summary pp. 431-432.]  
 b. PEREIRA, O. & DESLANDES, N., 1954.—“Resultados de uma tentativa para determinar a idade do *Australorbis glabratus* (Say, 1818).” **6** (2), 433-465. [English summary pp. 438-439.]

(722a) Five experiments with sodium pentachlorophenate in running streams in Minas Gerais, Brazil, showed that the chief obstacle preventing the chemical from reaching great distances in the original concentration was its retention in the soil. This seemed to be greater in mud than sand, lasted about 20 days and was not reduced when tar soap was applied with the molluscicide. Although the treatment for 48 hours produced the intended concentration of 10 p.p.m. up to a distance of 2,900 m., treatment for 60 hours did not increase this distance. In all cases the soil had a greater and more lasting concentration of sodium pentachlorophenate than the water.

M.MCK.

(722b) The lower the density of population of *Australorbis glabratus*, the higher are the growth and reproduction rates. When observed in the laboratory up to 60 days of age, the morphology and period of first laying were both related to growth but not to age. Once the shell is 5 mm. in maximum diameter the snail can be identified. The anatomy of *A. glabratus* is illustrated on eleven pages of figures.

M.MCK.

### 723—*Revue du Corps Vétérinaire de l'Armée. Paris.*

a. BELLOCQ, B. & MOUTON, J., 1954.—“Image de la lésion à *Spirocerca sanguinolenta*.” **3** (3), 112–113.

(723a) Bellocq & Mouton present, with a brief note, three photographs and a diagram of the lesion caused by *Spirocerca lupi* in the thoracic portion of the oesophagus of a dog which died. The oesophagus was almost completely blocked and the muscle layer atrophied. S.W.

### 724—*Revue de Pathologie Générale et Comparée.*

a. DEBELMAS-LORENTZ, A. M., 1954.—“Contribution à l'étude du pouvoir antihelminthique des essences végétales et de certains de leurs constituants.” **54** (663), 1343–1404.

(724a) [This paper is concluded in *Rev. Path. gén. comp.*, 1955, **55**, 2–51. For abstract of complete paper see *Helm. Abs.*, **24**, No. 288a.]

### 725—*Revue Romande d'Agriculture, de Viticulture et d'Arboriculture.*

a. SAVARY, A., 1954.—“Dégâts causés aux cultures de betteraves sucrières par la maladie vermiculaire.” **10** (1), 88–89.

(725a) Damage to sugar-beet caused by *Ditylenchus dipsaci* occurs in several areas in French Switzerland. In infested fields the total yield was reduced by 20% and the sugar by 25%. The worst damage was in fields where sugar-beet was grown every second year. It is considered desirable that the possibility of finding resistant varieties of sugar-beet should be investigated.

M.T.F.

### 726—*Schriften des Naturwissenschaftlichen Vereins für Schleswig-Holstein.*

a. GERLACH, S. A., 1954.—“Die freilebenden Nematoden der schleswig-holsteinischen Küsten.” **27** (1), 44–69.

(726a) Gerlach gives the incidence and distribution of the 229 species of free-living nematodes, including 41 terrestrial species, which have been found so far in the eulitoral region of the North Sea coast, the Kiel Bay and the brackish-water districts of Schleswig-Holstein.

G.I.P.

### 727—*Science. Lancaster, Pa.*

a. THOMAS, L. J., BABERO, B. B., GALLICCHIO, V. & LACEY, R. J., 1954.—“Echinococcosis on St. Lawrence Island, Alaska.” **120** (3131), 1102–1103.

(727a) Alveolar echinococcosis was present in 33 out of the 198 voles *Microtus oeconomus* and *Clethrionomys rutilus* on St. Lawrence Island (North East Cape), during part of the summer of 1954. Two out of 12 ground squirrels, *Citellus undulatus*, and one out of four shrews, *Sorex jacksoni*, were also infected. Four out of six foxes, *Alopex lagopus*, harboured mature *Echinococcus*, their general appearance suggesting that they were *E. granulosus*.

R.T.L.

**728—Scientific Horticulture.**

- a. CHAMBERLAIN, R., 1954.—“ Potato root eelworm prevention in Northern Ireland.” Year 1952-54, 11, 118-123.
- b. STANILAND, L. N., 1954.—“ Recent research on important horticultural pests in the south west.” Year 1952-54, 11, 191-196.

(728a) In Northern Ireland potato root eelworm (*Heterodera rostochiensis*) is a notifiable pest and where its presence is confirmed no potatoes or tomatoes may be grown and neither soil nor plants with soil on their roots may be removed. In infected glass-houses steam sterilization or resoiling is compulsory. Surveys have shown that infestation is practically confined to four small areas and in the zones around them potatoes may not be grown more often than twice in eight years, after the fields have been sampled and declared “eelworm-free”. Stock Seed certificates are granted only when no eelworm cysts have been found in the field. Nurseries and fields where brassica plants and strawberry runners are grown for sale are sampled each year and must be free from eelworm before sale of the plants is allowed. A detailed description is given of the soil sampling technique used.

M.T.F.

(728b) Staniland reports on work carried out from 1946 to 1954 by the northern section of N.A.A.S., S.W. province. Hot-water treatment with the addition of chlorophenol solubilized by detergents has led to much better control of stem eelworm in narcissus; this has been coupled with the better design of hot-water baths. Eelworm in chrysanthemum is best controlled by treatment for five minutes at 115°F., in strawberries by seven to ten minutes at 115°F. and in mint runners by ten minutes at 115°F. Lilies can be treated for one-and-a-half hours at 110°F. Solubilized chemicals have also been used to control nematodes in soil. *Pratylenchus pratensis* has been shown to initiate root rot in delphinium and has been controlled by D-D mixture. Work on fumigation by methyl bromide of narcissus bulbs infested with stem eelworm is continuing.

J.B.G.

**729—Scientific Publications. Freshwater Biological Association, Ambleside.**

- a. MANN, K. H. & WATSON, E. V., 1954.—“ A key to the British freshwater leeches with notes on their ecology.” No. 14, 21 pp.

(729a) An up-to-date list of the 13 species of British freshwater Hirudinea is provided. *Boreobdella verrucata* (Fr. Müller, 1844) is included in the key (although it is doubted if the identification is correct). Notes are given on structure, methods of collection, examination and preservation. A coloured plate illustrates ten of the species.

R.T.L.

**730—Skritter. Norsk Polarinstitutt, Oslo.**

- a. ABS, O. & SCHMIDT, H. W., 1954.—“ Die arktische Trichinose und ihr Verbreitungsweg.” No. 105, 34 pp.

(730a) Abs & Schmidt present a more detailed consideration of the prevalence and transmission of trichinellosis in the Arctic than that given by them in *Z. ges. Innere Med.* 9, 758-760 [for abstract see No. 747a below]. Incidence in natives is thought to be fairly high although no figures can be given. One or two big outbreaks have been confirmed and other epidemics ascribed to food poisoning may well have been due to *Trichinella*. Polar bears are known hosts, and their flesh is often eaten in an uncooked state. *Trichinella* has been reported from the following Arctic mammals: dog, polar bear, fox, wolf, grizzly bear (*Ursus horribilis*), large brown bear (*U. arctos*), arctic fox (*Alopex lagopus*), seal (*Erignathus barbatus*), walrus (*Odobenus rosmarus*), white whale (*Delphinapterus leucas*). The question of the transmission of *Trichinella* between animal hosts is still open. Some land mammals might become infected by eating infected carcasses but this cannot be the case with marine mammals. The authors are convinced that the most important links are carrion birds (particularly gulls which are very

common in the Arctic) who would pass any larvae consumed in viable form in the faeces. Gulls would thus transport larvae over long distances. In support of this theory it is pointed out that Arctic mammals—particularly polar bears—are known to be fond of birds eggs and frequently raid gulls' nests; they could easily ingest faeces dropped in or near the nests. Since meat inspection is not feasible in the sparsely populated areas, prevention of human infection must rely mainly on propaganda pointing out the dangers and insisting on the need for adequate cooking of flesh.

A.E.F.

### 731—South African Medical Journal.

a. WALT, F., 1954.—“The Katayama syndrome.” **28** (5), 89–93.

(731a) The term Katayama disease, originally used for a clinical syndrome associated with the toxæmic invasive phase of *Schistosoma japonicum*, is used by Walt for the similar picture seen in early infections with *S. mansoni* and *S. haematobium* and twelve cases are described in detail. In areas where schistosome infections are endemic, an unexplained fever may be due to this syndrome.

R.T.L.

### 732—Strahlentherapie.

a. HOFMANN, D. & MÜLLER, K., 1954.—“Über die Wirkung einer ultrafraktionierten Radium-Betastrahlung auf einzellige Eier von *Ascaris megalocephala*.” **95** (2), 296–301.

(732a) Hofmann & Müller have studied, by means of a new ultra-fractionating apparatus, the effect of radium beta-rays on unicellular ova of *Parascaris equorum*. It was found that the greater the impulse-pause ratio, the greater the percentage of eggs killed. Continuous irradiation produced an even greater mortality among the eggs.

A.E.F.

### 733—Svensk Jordbruksforskning.

a. BINGEFORS, S., 1954.—“Resistens mot nematoder hos våra kulturväxter.” Year 1954, pp. 174–180.

(733a) The literature on resistance to nematodes in agricultural crops is reviewed. S.B.

### 734—Tierärztliche Umschau.

a. MENDHEIM, H., 1954.—“Über die Wurmbekämpfung mit dem neuartigen Fermentpräparat Nematolyt.” **9** (15/16), 276–277.

(734a) In this preliminary note, Mendheim reports the successful use of the enzyme preparation nematolyt for the control of helminths in zoo animals. Animals of the size of goats were given 30 to 50 gm., larger animals such as antelopes and equines, three doses of 50 gm., and elephants three doses of 100 gm. Nematolyt was found to be completely non-toxic to the hosts and could therefore be repeated when reinfection occurred.

A.E.F.

### 735—Tijdschrift voor Diergeneeskunde.

a. VLOTEN, J. G. C. VAN, 1954.—“Gezondheidsdienst voor postduiven. Jaarverslag 1953.” **79**, 347–351.  
b. ULSSEN, F. W. VAN, 1954.—“Menginfecties bij kuikens van *Salmonella bareilly* met darmparasieten.” **79**, 715–720. [English, French & German summaries pp. 719–720.]

(735a) Ova of *Capillaria columbae* were present in the faeces of 146 out of 2,711 carrier pigeons and *Echinoparyphium paralum* was identified in 16 pigeons from the western part of the Netherlands.

R.T.L.

(735b) Infections with *Capillaria* sp. and coccidia were found at autopsies made during an investigation into five outbreaks of *Salmonella bareilly* in poultry one to three months old.

R.T.L.

### 736—Transactions of the British Mycological Society.

- a. JUNIPER, A. J., 1954.—“*Dactylaria pyriformis* sp. nov.” **37** (4), 437-440.

(736a) A description is given of *Dactylaria pyriformis*, a new species of hyphomycete which captures free-living nematodes by means of sticky three-dimensional hyphal networks.

J.B.G.

### 737—Türk Veteriner Hekimleri Derneği Dergisi.

- a. KURPINAR, H., ERGÜN, H. & MERDIVENCI, A., 1954.—“Yurdumuz çil keklik (*Perdix perdix canescens*) ve kırmızı keklik (*Alectoris graeca*) lerde bulduğumuz nematod ve cestod’lar.” **24** (90/91), 1376-1384. [English summary p. 1383.]
- b. GÜRALP, N., 1954.—“Genç gevşenlerde phenothiazine ile yapılan tedaviyi müteakip gözlerde görülen ‘Ziya’ya karşı hassasiyet’ (photosensitizasyon) ve buna karşı alınması lazımlı gelen profilaktik tedbirler.” **24** (90/91), 1385-1387. [English summary p. 1387.]
- c. KURPINAR, H., MERDIVENCI, A. & ERGÜN, H., 1954.—“Evcil güvercin (*Columba livia domestica*) lerde bulduğumuz patojen nematod’lar.” **24** (94/95), 1589-1596. [English summary p. 1595.]
- d. GÜRALP, N., 1954.—“I.C.I. firmasının yeni bir anthelmentik ilaç ‘Minel’ ile yaptığımız deneyler ve aldığımız sonuçlar.” **24** (94/95), 1597-1604. [English summary p. 1603.]

(737a) *Metroliasthes lucida*, *Raillietina echinobothrida* and *Tetrameres fissispina* are recorded in *Perdix perdix canescens* and *Alectoris graeca* in Turkey for the first time. S.W.

(737b) [This paper is a discussion of the photosensitization which occurs in young ruminants following anthelmintic treatment with phenothiazine.]

(737c) The presence of *Ascaridia columbae* and *Capillaria columbae* in domestic pigeons in Turkey is recorded for the first time. Their morphological characters, life-histories, pathology, treatment and preventive measures are briefly outlined.

R.T.L.

(737d) Minel contains phenothiazine 59·02%, hexachlorethane 39·34%, copper sulphate 0·82% and cobalt sulphate 0·82%. 25 gm. were administered to 26 sheep, 18 gm. to 5 lambs, 90 gm. to 5 cattle, 25 gm. to 7 goats and 15 gm. to 5 kids. The faeces were examined six days later. The treatment proved highly effective against *Fasciola hepatica*, *Haemonchus contortus*, *Ostertagia* spp. and *Oesophagostomum* sp., was less effective against *Chabertia*, *Bunostomum* and *Trichostrongylus* spp., had very little effect on *Nematodirus* sp., and had no effect on *Moniezia* spp., *Dicrocoelium dendriticum*, *Trichuris ovis* or *Strongyloides papillosus*. In those regions of Turkey where liver-fluke and trichostrongylosis are wide-spread it is recommended that the animals should be treated before they are let out into the pastures in the spring and before being taken into the fold in autumn.

R.T.L.

### 738—Verslag van het Centraal Instituut voor Landbouwkundig Onderzoek. Wageningen.

- a. DOEKSEN, J., 1954.—“Natuurlijke teruggang van de leverbotinfectie bij rundvee.” Year 1953, pp. 35-38. [English summary p. 38.]

(738a) The natural decrease of eggs of *Fasciola hepatica* in the faeces of 75 cows of the same age on different farms is shown in tabular form. Sheep and young cattle become infected during the decrease in infection in the older animals.

R.T.L.

**739—Veterinária. Rio de Janeiro.**

a. VIANNA, Y. L., 1954.—“Sobre um caso de capilariose hepática em canino do Rio de Janeiro.” *8* (2), 3-20. [English summary pp. 10-11.]

(739a) *Capillaria hepatica* has been found in the liver of a dog in Brazil for the first time. Along with large numbers of ova in the liver there was fatty degeneration but their exact relationship was not established. R.T.L.

**740—Veterinaria Italiana.**

a. CAPORALE, G., 1954.—“Qualche osservazione recente sulla cura della filariosi del cane.” *5* (12), 1157-1158.

(740a) Caporale reviews the various methods of treating dogs for *Dirofilaria immitis* infection by using arsenamide, antimony compounds or diethylcarbamazine. M.MCK.

**741—Veterinariya.**

a. RIBALTOVSKI, O. V., 1954.—[Treatment of cestode infections in geese with defatted pumpkin seed mash.] *31* (9), 42-43. [In Russian.]  
 b. TSVETAeva, N. P., 1954.—[Some problems in the pathology and diagnosis of *Dictyocaulus* infection in sheep.] *31* (10), 39-44. [In Russian.]

(741a) Geese with *Drepanidotaenia lanceolata* were given ground pumpkin seeds boiled to a mash with corn dust. 66 geese received an equivalent of 20 gm. of seeds per gosling and 40 gm. per adult and passed 41 worms; the second group of 95 goslings and adults received an equivalent of 30 gm. and 50 gm. respectively of seeds, defatted with dichlorethane, and passed 720 worms. The worms were excreted from 30 minutes to eight hours after the treatment. When treated with arecoline, six days later, all the geese of the first group but only two of the second group passed some worms. The high intense efficacy (99.6%) of the defatted seeds enabled them to be used effectively as a prophylactic in three weekly doses of 20 gm. for goslings and 30 gm. for adults. G.I.P.

(741b) Tsvetaeva describes and illustrates the pathology of *Dictyocaulus* infection of the lung in sheep and especially that of the early stages. G.I.P.

**742—Veterinarski Arhiv.**

a. WINTERHALTER, M. & DELAK, M., 1954.—“Parenteralna aplikacija tetraklorometana (carboni tetrachloridum). II. Otrovnost tetraklorometana za svinje nakon peroralne i supkutane aplikacije.” *24* (9/10), 197-206. [English & German summaries pp. 205-206.]

(742a) Carbon tetrachloride in liquid paraffin given subcutaneously is far less toxic to pigs than when given orally and can be used for *Fasciola* infections. When equal amounts of carbon tetrachloride were administered by the two methods, the pathological changes in the liver were far less severe after subcutaneous injection: centrolobular necrosis was absent, necrotic epithelial cells were rare and proliferation of endothelial cells was much slighter. There was marked parenchymatous degeneration. Regeneration of the liver cells commenced on the first day but an irritant effect on the epithelial cells could be seen throughout the six days that observations were continued. G.I.P.

**743—Veterinarski Glasnik. Belgrade.**

a. BELOVITIĆ, M., 1954.—“Dnevni iskaz parazitarnih invazija kod klanih svinja u Krizevčima s naročitim obzirom na ehinokokozu i distomatozu.” 8 (12), 784–788.

(743a) In the Krizevci district of Yugoslavia daily reports were made from various centres on the occurrence of echinococcosis and fascioliasis in slaughtered pigs. The number of pigs examined in a period from October, 1953 to July, 1954 totalled 7,895. From 7% to 80% (an average of 36.7%) were infected with hydatid and 1.4% to 20% with liver-fluke. G.I.P.

**744—Wissenschaftliche Zeitschrift der Martin-Luther-Universität Halle-Wittenberg.**

a. HARTWICH, G., 1954.—“Zur Kenntnis der Gattungen *Hamatospiculum* Skrjabin, 1916 und *Parhamatospiculum* Skrjabin & Petrov, 1928 (Nematoda, Filarioidea).” 3, Mathematisch-naturwissenschaftliche Reihe, Heft 3, pp. 659–663.

(744a) Hartwich transfers the genus *Hamatospiculum* Skrjabin, 1916 from the Filariinae to the Dipetalonematinae. This is based on the fact that the oesophagus of all *Hamatospiculum* species is divided into a short, narrow anterior part and a long, relatively broad posterior part and that the two spicules vary greatly in length and shape. These characteristics are typical of the genera of Dipetalonematinae but are not found in Filariinae. Hartwich is also convinced that *Parhamatospiculum* is a synonym of *Hamatospiculum*. The genus is redefined and a list of species and their hosts is given. A.E.F.

**745—Za Socialistické Zemědělství. Prague.**

a. ŠEDIVÝ, J. & POHAJDA, F., 1954.—“Hád’átko bramborové—nový škůdce v ČSR.” 4 (10), 1060–1065.

(745a) The occurrence of *Heterodera rostochiensis* in Czechoslovakia is reported for the first time. R.T.L.

**746—Zeitschrift für Angewandte Zoologie.**

a. MENDHEIM, H., 1954.—“Vergleichend—Oekologische Studien über die Helminthenfauna der Haus- und Wanderratte.” Year 1954, No. 3, pp. 261–267.

(746a) Mendheim collates from various authors the incidence in domestic and wild rats of *Hymenolepis diminuta*, *H. fraterna*, *Cysticercus fasciolaris*, *Hepaticola hepatica*, *Trichosomoides crassicauda*, *Syphacia obvelata* and *Trichinella spiralis*. R.T.L.

**747—Zeitschrift für die Gesamte Innere Medizin und ihre Grenzgebiete.**

a. ABS, O. & SCHMIDT, H. W., 1954.—“Wie infizieren sich arktische Tiere mit Trichinen. (Vorläufige Mitteilung).” 9 (15), 758–760.

(747a) *Trichinella* has been reported from the Arctic Region in both land and sea mammals. Since the flesh of these animals is used for human consumption, either raw or not sufficiently cooked to destroy larvae, there is always the risk of outbreaks of trichinellosis in man. The problem of the mode of transmission of *Trichinella* in the Arctic is thus of some importance and in this preliminary communication Abs & Schmidt consider it extremely possible that carrion-eating birds play an important part. Any larvae swallowed by the birds would pass undigested in the faeces and could therefore spread *Trichinella* to uninfected carcasses. The fact that some Arctic mammals eat birds' eggs suggests another source of infection from bird faeces dropped near the eggs or into broken eggs. A.E.F.

**748—Zentralblatt für Gynäkologie.**

a. HEIM, K., 1954.—“Granulationstumor um Wurmeier in der Bauchhöhle.” *76* (34), 1359–1361.

(748a) A 30-year-old woman was operated on for suspected endometriosis: several nodules found just above the right uterosacral ligament were found to contain *Enterobius ova*. A.E.F.

**749—Zoologcheski Zhurnal.**

- a. BOEV, S. N., 1954.—[Lung nematodes of ruminants of Kazakhstan and their adaptation to the hosts and environment.] *33* (4), 779–787. [In Russian.]
- b. BIKHOVSKI, B. E. & DUBININA, M. N., 1954.—[Systematics of digenetic trematodes belonging to the family Acanthocolpidae Lühe, 1909.] *33* (4), 788–793. [In Russian.]
- c. PARAMONOV, A. A., 1954.—[Specificity of plant nematodes and its importance in agricultural practice.] *33* (5), 1002–1024. [In Russian.]
- d. SHULTS, R. S. & DAVTYAN, E. A., 1954.—[On the forms of host-parasite relationships in helminthology.] *33* (6), 1201–1205. [In Russian.]
- e. CHEBOTAREV, R. S., 1954.—[New data on the biology of *Macracanthorhynchus* which causes a disease of pigs.] *33* (6), 1206–1209. [In Russian.]

(749a) From literature Boev lists 20 species of pulmonary nematodes in ruminants in Kazakhstan and observes that 14 species occur in domestic and wild sheep and goats, while only five species are found in deer, two in camels, one in cattle but none in antelopes. He explains these differences by the presence or absence of the three groups of factors influencing the host as defined by Pavlov (1946). The specificity of some of the species and the occurrence of pulmonary nematodes of ruminants in Kazakhstan and Central Asia are discussed. G.I.P.

(749b) *Paratormopsis siluri* n.g., n.sp. is now described and figured from material originally collected in *Silurus glanis* and *Glyptosternum reticulatum* mainly from the Aral and Caspian Sea basins. The new genus, with a well developed prepharynx, is similar to *Tormopsis*, but differs from it in the position of the vitelline glands at the sides between the ventral sucker and the posterior end of the body, and the elongated cirrus pouch which has an internal and a well marked external seminal vesicle. This latter character also distinguishes *Paratormopsis* from *Skrjabinopsolus*. The authors, examining a large number of *S. acipenseris*, found variation in the morphology with the age of the worm and, revising the diagnosis of the genus and species accordingly, conclude that *S. skrjabini* is a synonym of *S. acipenseris*. G.I.P.

(749c) Paramonov describes the characters which separate phytonematodes from free-living and animal-parasitic nematodes and classifies their ontogenesis into the (i) geohelminth type which proceeds via host-soil-host with development in the soil obligatory, e.g. *Tylenchulus*, *Rotylenchulus*; (ii) obligatory pseudogeohelminth type proceeding via host-soil-plant but the soil acts as transit-medium only, e.g. *Anguina* and *Heterodera*; (iii) non-obligatory pseudogeohelminth type where larval passage through soil is not necessary and is often absent, e.g. *Meloidogyne*; and (iv) obligatory anbiohelminth type with regular repetition of the development within the same plant tissue, which is characteristic for most genera of Tylenchidae, Neotylenchidae, Aphelenchidae and Aphelenchoididae and is subdivided into (a) with an ectoparasitic phase, as in most species of *Aphelenchoides*, e.g. *A. fragariae*, and (b) with endoparasitic ontogenesis, i.e. no change of localization as in *Tylenchorhynchus*, *Ditylenchus*, *Pratylenchus* and others. Paramonov concludes that the anbiohelminth type of development is always dangerous for plants, particularly annuals. The specificity of phytonematodes, which is discussed, is determined by the specificity of the host. G.I.P.

(749d) Shults & Davtyan distinguish four host-parasite relationships of helminths: the obligatory, the facultative, the abortive (the parasite enters its biologically unusual host and continues its development but does not reach infectivity or sexual maturity) and the captive

(the parasite enters its biologically unusual host and cannot develop further). The authors hold that many helminths from the latter two systems can be of greater significance to man and farm animals than some from the first two, and discuss the relation of these four systems to natural immunity of the host.

G.I.P.

(749e) In the wooded district of the Ukraine the main intermediary of *Macracanthorhynchus hirudinaceus* is the larva of *Oryctes nasicornis* and pigs can feed on the infected larvae all the year round. In affected farms, 12.6% to 100% of *Oryctes* larvae were infected with 74 *M. hirudinaceus* per larva. Other intermediaries in the Ukraine are the May beetle and species of *Geotrupes* and *Aphodius subterraneus*.

G.I.P.

#### NON-PERIODICAL LITERATURE

750—ANON., 1954.—“Golden nematode handbook.” Hicksville, N.Y.: U.S. Agricultural Research Service. Plant Pest Control Branch, 45 pp.

This handbook is intended for the use of technicians engaged in surveying for potato-root eelworm, *Heterodera rostochiensis*. It gives the procedure in detail from field sampling to the preparation of microscope slides of the nematodes, as carried out at the United States Department of Agriculture Golden Nematode Control Project Laboratory. Photographs illustrate the methods and equipment used.

M.T.F.

751—BORCHERT, A., 1954.—“Lehrbuch der Parasitologie für Tierärzte.” Leipzig: S. Hirzel, xv + 448 pp.

752—BRANDE, J. VAN DEN, KIPS, R. H., D'HERDE, J. & MOL, L. VAN, 1954.—“Effet nématocide de quelques produits chimiques sur les kystes du nématode de la pomme de terre *Heterodera rostochiensis* Ww.” Congrès International de Phytopharmacie (3rd), Paris, 1952. Vol. 2, pp. 234-236.

Several chemicals were tested for their nematicidal effect on wet and dry cysts of *Heterodera rostochiensis*. When used as a vapour chlorobromopropene was lethal to dry cysts exposed for five days, but Systox, Pestox, Isopestox, D-D mixture, ethylene dibromide and calcium cyanamide caused no reduction in hatch from cysts exposed for eight days and only D-D gave reduced hatch from cysts exposed for one month. Cysts soaked in water or root diffusate were killed by one day's exposure to the vapours of chlorobromopropene, D-D and ethylene dibromide, while Pestox-treated cysts had a very much reduced hatch. A 2% solution of Pestox caused some reduction in the numbers of larvae hatching from cysts soaked for one day or more but Isopestox at the same strength caused no apparent diminution when cysts were soaked in it for four days and very little after eight days soaking.

M.T.F.

753—CONFERENCE ON PARASITES AND PARASITIC DISEASES OF DOMESTIC RUMINANTS, Bozeman, Montana, September 15-16, 1954. Report, 28 pp.

- a. PORTER, D. A., 1954.—“Comparison of methods of administering phenothiazine to cattle.” [Abstract.] p. 8.
- b. PORTER, D. A., 1954.—“Experiments on concurrent infections with coccidia and helminths in calves.” [Abstract.] pp. 8-9.
- c. PORTER, D. A., 1954.—“Quantitative postmortem examination for helminths in cattle.” [Abstract.] p. 9.
- d. SENGER, C. M. & SEGHELLI, L., 1954.—“Bionomics of *Nematodirus spathiger*.” [Abstract.] pp. 11-12.
- e. EVELETH, D. F. & BOLIN, F. M., 1954.—“Parasitic gastritis of elk.” [Abstract.] pp. 12-13.
- f. PRICE, E. W., 1954.—“The lancet fluke in the United States.” [Abstract.] pp. 13-14.
- g. ALLEN, R. W., 1954.—“Studies on sheep parasites.” [Abstract.] pp. 14-15.
- h. ALLEN, R. W., 1954.—“Species of helminth parasites occurring in cattle in the southwest. (Preliminary report).” [Abstract.] p. 15.
- i. SHUMARD, R. F. & EVELETH, D. F., 1954.—“Digestibility of protein, crude fiber, organic matter, and phosphorus in non-clinical parasitism of lambs.” [Abstract.] p. 16.
- j. HONESS, R. F., 1954.—“Incidence of lungworms in bighorn sheep.” [Abstract.] pp. 16-17.
- k. HONESS, R. F., 1954.—“Studies on the life history of *Thysanosoma actinoides*. Review of some of the work at the Wyoming Station.” [Abstract.] pp. 18-20.
- l. OLSEN, O. W., 1954.—“Life history studies on fringed tapeworm in Colorado.” [Abstract.] pp. 20-21.
- m. KATES, K. C., 1954.—“Observations on the life cycle of *Nematodirus spathiger*, a nematode parasitic in the intestine of sheep and other ruminants.” [Abstract.] pp. 21-22.
- n. KATES, K. C., 1954.—“A second experiment on the pathogenic interaction of *Haemonchus contortus* and *Trichostrongylus axei* in lambs.” [Abstract.] pp. 22-24.

(753m) [A fuller account of this work has been published in *Amer. J. vet. Res.*, 1955, 16, 105-115. For abstract see Helm. Abs., 24, No. 4d.]

754—EUROPEAN PLANT PROTECTION ORGANIZATION, 1954.—“Potato root eelworm in Europe in 1953.” Paris: European Plant Protection Organization, 12 pp. [Also in French.]

Notes are given on the incidence of potato-root eelworm (*Heterodera rostochiensis*) in Europe together with reference to the internal measures and import regulations designed by each country to prevent its spread. Newly infested territories were reported during 1953 by Algeria and Iceland. A brief outline is given of the research in progress in several countries.

M.T.F.

755—SPEARS, J. F., 1954.—“Progress report of golden nematode control project for calendar year 1954.” Hicksville, N.Y.: U.S. Department of Agriculture, Agricultural Research Service, Plant Pest Control Branch, v+61 pp.

This is a comprehensive survey of the work done during 1954 on *Heterodera rostochiensis* at the Golden Nematode Research Laboratory, Long Island, New York. A detailed account is given of the distribution of the nematode on Long Island and an outline of the scheme for surveying the whole of the U.S.A. So far *H. rostochiensis* has not been found established outside Long Island in the U.S.A. but it is known to be in Mexico. The measures taken to combat its spread include sterilization of contaminated farm equipment, fumigation of infested nurseries and control of movement of infested top soil and of nursery plants and vegetables from infested areas. Mention is made of a proposed survey in Florida for *Radopholus similis*, the cause of spreading decline in citrus and avocado plantations. Preparations are being made for a survey of other states for potato rot nematode, *Ditylenchus destructor*, since its discovery in the seed potato growing area in Wisconsin. The results of a survey of tobacco growing areas in a number of states showed *Heterodera tabacum* to be present only in Connecticut. *H. glycines* has caused damage to soya beans in North Carolina. An outline is given of lines

of research in progress in connection with *H. rostochiensis* and these include soil fumigation, the breeding of resistant varieties of potato, the effects of crop rotations and of soil temperature and moisture on the nematode population.

M.T.F.

756—STROBL, F., 1954.—“Versuche über das Gefrieren von trichinösem Schweinefleisch als Grundlage für eine Gefriervorschrift.” Dissertation, Munich, 51 pp.

Strobl's researches have shown that Trichinella inspection, as laid down in German legislation, is both uneconomic and unsafe. He suggests that all meat liable to Trichinella infection should be subjected to adequate refrigeration and that inspection should be discontinued. Strobl recommends refrigeration at varying temperatures and periods (from 24 days at  $-11^{\circ}\text{C}$ . to 5 minutes at  $-40^{\circ}\text{C}$ .) as being completely safe.

A.E.P.

## INDEX OF AUTHORS

(The reference is to the serial number. Numbers in **bold** type indicate abstracts; numbers in parentheses indicate subsidiary authors in cases of joint authorship.)

Anon., **589a**, **750**.  
 Abdulrachman, S., **618a**.  
 Abdussalam, M., **696a**.  
 Abs, O., **730a**, **747a**.  
 Adams, J. R., (**643a**).  
 Addeo, E. C., **708c**.  
 Aguiar, H., (**712r**).  
 Aguilar, F. P., (**625a**).  
 Ahumada, M., **716a**.  
 Ajmerito, G., **569c**.  
 Akhmerov, A. H., **619i**.  
 Albuquerque Neves, H. de, **712e**, **712k**, **712x**.  
 Allen, jr., H. C., (**698a**).  
 Allen, R. W., **753g**, **753h**.  
 Almeida Reys, J. de, **711a**.  
 Alonso Fontao, J., (**717c**), (**717f**).  
 Alves da Cruz, A., **586a**.  
 Amato Neto, V., **633e**, **715d**.  
 Andrade, R. M. de, **712s**.  
 Andrade, Z. A., **579a**.  
 Andrews, J. S., (**700a**).  
 Aoyama, J., (**632a**).  
 Aprosio, N., (**552b**).  
 Arai, S., **645l**.  
 Arends, T., **628a**.  
 Asakura, S., **632b**.  
 Aude Nuñez, N., (**718b**).  
 Avalishvili, S. D., **667bc**.  
 Azambuja, C. E. A., (**712q**).  
 Babenin, I. G., **652d**.  
 Babero, B. B., (**727a**).  
 Bailey, W. S., **581b**.  
 Baird, D. M., **639c**.  
 Baker, N. F., **693b**.  
 Balasubramaniam, N., **607c**.  
 Bangham, R. V., **643a**.  
 Barbosa, F. S., **702a**, **702d**, (**702e**), **702f**.  
 Barclay, S., **679a**.  
 Barquet Chediak, A., **717c**.  
 Barroux, P., **599a**.  
 Basnuevo, J. G., **717a**, **717b**, **717c**, **717f**, **717g**, **717h**, **717i**, **717j**.  
 Battelli, C., **580g**.  
 Baumann, H., (**566a**).  
 Bayona-González, A., **609b**.  
 Bazán de Segura, C., **590b**, **625a**.  
 Bazterrica, E., **708b**.  
 Beburishvili, G. A., **652f**.  
 Bellocq, B., **723a**.  
 Belovitč, M., **743a**.  
 Belyaev, A. A., **652c**.  
 Bemrick, W., (**639b**).  
 Benarroch, E. I., **721a**.  
 Benassi, E., **570a**.  
 Benbrook, E. A., **693c**.  
 Beninati, F., (**569a**), **591g**.  
 Benson, R. H., (**698a**).  
 Berdonneau, R., (**604b**).  
 Berning, H., **669a**.  
 Bhaduri, N. V., **635a**.  
 Bibawi, E., **641g**.  
 Bierstein, P., (**649c**).  
 Bikhovski, B. E., **749b**.  
 Binge fors, S., **584a**, **733a**.  
 Biondo, G., **569a**.  
 Birchfield, W., **694k**, **695a**.  
 Bizulyavichyus, S. K., **667f**.  
 Blair, H. E., (**698b**).  
 Blanco Rabassa, E., (**717c**), (**717f**).  
 Blue, W. G., (**699e**).  
 Boch, J., **674a**.  
 Boev, S. N., **749a**.  
 Bolin, F. M., (**753e**).  
 Bono, G. del, (**580h**).  
 Borchert, A., **751**.  
 Borges, F., (**717b**).  
 Borges Ferreira, L., (**586b**).  
 Botti, L., **580b**, **580h**.  
 Bouchel, J., **659a**.  
 Bourgeon, R., **552b**.  
 Bourrel, P., **660d**.  
 Bouzas, J. A., (**708b**).  
 Boyd, E. M., **563e**.  
 Bragdon, K. E., **694d**.  
 Brande, J. van den, **752**.  
 Bregadze, I. L., **652j**.  
 Bretschneider, L. H., **697a**.  
 Brewton, W. S., (**694 l**).  
 Brisola, A. P., (**715a**).  
 Brizard, A., **605e**.  
 Bronzini, E., **681a**.  
 Brooks, A. N., **699d**.  
 Brooks, T. L., **611b**, **694c**, (**699j**).  
 Brown, E. B., **686b**, **686d**, **686f**.  
 Brown, jr., W. L., **621a**.  
 Brumpton, L. C., **604c**.  
 Bruni, A., **591f**.  
 Brygoo, E. R., **604f**.  
 Bueno, R. A., (**715c**).  
 Bunde, C. A., **698b**.  
 Burch, G. R., (**698b**).  
 Burgstedt, H., **676a**.  
 Buslaev, M. A., **667q**.  
 Camain, R., (**599b**), (**600a**).  
 Camargo, H. W., **626a**.  
 Camp, A. F., **694a**.  
 Canlas, M. S., (**649a**).  
 Caporale, G., **740a**.  
 Carayon, A., **660c**.  
 Cardeño, R., **553a**.  
 Carr, H. P., (**718b**).  
 Carrilho, J. A., **586b**.  
 Carter, W., **640a**.  
 Carvalho, J. C., **715e**.  
 Carvão Gomes, F. A., (**560e**).  
 Casanova, R., (**717f**).  
 Casiragli, J. C., **708a**.  
 Casler, W. F., **658a**.  
 Castel, P., (**604d**).  
 Cattan, R., **601a**.  
 Causa, A., **717d**.  
 Cavier, R., **603a**, **603b**, **603c**.  
 Chamberlain, R., **728a**.  
 Chanishvili, I. V., **667h**.  
 Chebotarev, R. S., **749e**.  
 Chen, H. H., (**644a**).  
 Chen, H. T., **550a**.  
 Chenuau, U. A., **714a**.  
 Chenderovitch, Y., (**601a**).  
 Chignoli, V., **634b**.  
 Chimi, P., **568d**.  
 Chowdhury, A. B., (**635a**).  
 Christie, J. R., **699f**.  
 Chubrik, G. K., **619g**.  
 Chung, H. L., **608a**.  
 Clark, F. A., (**699a**).  
 Coelho, B., **702b**.  
 Coelho, M. V., (**702a**), (**702c**), (**702d**), (**702e**), (**702f**).  
 Colas, J., (**623a**).  
 Collomb, H., (**660b**).  
 Comar, C. L., (**639a**).  
 Combe, I., **590a**.  
 Consolin, J., (**712ba**).  
 Corrêa, M. O. A., **715c**, (**715d**).  
 Cosco Montaldo, H., **561a**.  
 Costa, A., (**712o**), (**712u**).  
 Costa, M. M. da, (**560e**).  
 Costa Faro, M. M. da, (**560a**), (**560b**).  
 Coutinho, A. B., **711b**.  
 Coutinho, E. M., **702g**.  
 Couto, D., **665a**.  
 Cralley, E. M., **577a**.  
 Cristi, G. A., **562c**.  
 Cvetković, L., (**548a**).  
 Czapliński, B., **547d**.  
 Dadlez, J., **547c**.  
 D'Almeida, J., (**599a**).  
 Damasceno, R. G., (**712c**).  
 Damasceno, R. M. G., (**712 l**).  
 Damaso Prates, M., (**560d**).  
 Darnaud, C., (**574a**).  
 Davtyan, E. A., (**749d**).  
 Deane, L. M., (**712c**), **712d**, (**712m**).  
 Debeldas-Lorentz, A. M., **724a**.  
 Deiana, S., **580i**, **591h**.

Déjou, L., 660a.  
 Delak, M., (742a).  
 Delpla, R., 605c.  
 Demos, E. A., 644a.  
 Denard, G., (574a).  
 Dennis, W. R., (610a).  
 D'Ercole, G., (575b).  
 Deschiens, R., 604a, 604g.  
 Deslandes, N., (722b).  
 D'Herde, J., (752).  
 Dias, E., 672a, 672b, 712bb.  
 Diaz Ungria, C., 673a.  
 Diéguez Lamazares, E., (717a).  
 Diniz Sampaio, T., (560d).  
 Dirksen, G., 657a.  
 Dizer, Y. B., (619b).  
 Dobbin, jr., J. E., (702f).  
 Doeksen, J., 738a.  
 Dollfus, R. P., 604e.  
 Dorn, W., 668e.  
 Dougherty, E. C., 563b.  
 Drechsler, C., 677a.  
 Druzhinina, E. I., 667n.  
 Duarte, Y. N., (715c).  
 Dubinin, M. N., (749b).  
 DuCharme, E. P., 611a, 694b, 699i, (699j).  
 Dunning, R. A., 686c.  
 Dursunova, S. M., 667be.  
 Duthoit, C. M. G., (686e).  
  
 Ebel, J. P., (623a).  
 Eberle, U., (568c), (568d).  
 El Gazayerli, M., 641e.  
 El-Gindy, M. S., 641i.  
 Ellenby, C., 622a.  
 Emerick, R. J., 639b.  
 Epshtain, S. I., 667m.  
 Ergün, H., (737a), (737c).  
 Erkina, N. G., 619e.  
 Eston, T. E., (709b).  
 Eston, V. R., (709b).  
 European Plant Protection Organization, 754.  
 Euzéby, J., (605e).  
 Eveleth, D. F., 753e, (753i).  
 Eyraud, L., 605a.  
 Ezaki, Y., 645h.  
  
 Fain, A., 566h.  
 Falaschini, A., 569b.  
 Fassuliotis, G., 563d.  
 Fauré-Frémiel, E., 623a.  
 Feder, W. A., (699c).  
 Feijó Colaco, A. T., (560a), (560b).  
 Feldmessner, J., 699c.  
 Ferraz, W. G., (720a).  
 Ferreira, M. O., (712a), (712b), (712w).  
 Ferret, P., (574a).  
 Fiorillo, A. M., 633d, 709b.  
 Fisher, J. M., 583a.  
 Fitzpatrick, S. C., 582a.  
 Fleury, G. C., (715c).  
 Ford, H., 694h, 694j.  
 Fort, M., (566a).  
  
 Fraga de Azevedo, J., 560a, 560b, 560c, 560d, 560e, 560d.  
 França, J. T. de, (702h).  
 Frederico, F., (720a).  
 Freiman, A. C., (667y).  
 Frumusan, P., (601a).  
  
 Gabuzova-Shubenko, I. N., 667c.  
 Gadea, E., 701a.  
 Gallais, P., 660b.  
 Gallicchio, V., (727a).  
 Gama e S., jr., R. da, (712y).  
 Garaguso, P., 690a, 690b.  
 Garcia, W., (712f).  
 Garcia-Solórza, E., 713a.  
 Garduño, D. M., 649b.  
 Garnham, P. C. C., 566f.  
 Geller, I. E., (667z).  
 Gerlach, S. A., 726a.  
 German Olivier, A., 718a.  
 Gerwel, C., (547c).  
 Gigitashvili, M. S., 667j.  
 Gillet, J., 566b.  
 Ginetsinskaya, T. A., 619c.  
 Giromini, A., (627f).  
 Giromini, M., 627a, 627b, 627c, 627d.  
 Gismann, A., 641f.  
 Glashkina, T. P., (667ba).  
 Godwin, J. T., (557a).  
 Gönnert, R., 668b.  
 Goffart, H., 678a.  
 González Mijares, P., (628a).  
 Good, jr., J. M., 699e, (699f).  
 Gordon, E. I., 667t.  
 Gornak, K. A., 652h.  
 Gould, S. E., 602a.  
 Grabda, B., 547e.  
 Grabda, E., 670c.  
 Grabda, J., (670c).  
 Granati, A., (627c), (627d), 627f.  
 Gras, G., (604d).  
 Grechneva, L. V., (667e).  
 Green, L. E., 658b.  
 Griffiths, R. B., 648a.  
 Grimaldi, J. P., 562a, 562b.  
 Gross, R., 653a.  
 Gruesser, F., (658b).  
 Grunderbeeck, R. van, 566j.  
 Gudzhabidze, G. S., 667k.  
 Guedel, J., (660b).  
 Guntz, M., (552b).  
 Gürarp, N., 737b, 737d.  
 Guseinov, G. A., 667bb.  
  
 Halawani, A., 641a.  
 Hammond, R. A., 705a.  
 Hanks, R. W., (694d).  
 Harant, H., 604d.  
 Hartwich, G., 744a.  
 Hartz, H., 576a.  
 Hartz, P. H., 576b.  
 Hashimoto, T., 632c.  
 Hauptman, B., 670b.  
  
 Heim, K., 748a.  
 Heinz, H. J., 713b.  
 Helleu, C., 605b.  
 Herin, V., (566h).  
 Herrick, C. A., (639b).  
 Herrlich, A., 676b.  
 Höning, G., (578a), (578b).  
 Hoffman, D. O., 641b.  
 Hofmann, D., 732a.  
 Hohner, L., 571a.  
 Honess, R. F., 753j, 753k.  
 Hornbostel, H., 668c.  
 Hou, T. C., (608a).  
 Houel, J., (552a).  
 Howell, M., 694f.  
 Hsieh, H. C., (644a).  
 Hubendick, B., (649c).  
 Hunter, III, G. W., (636b).  
 Hutton, R. F., 598a.  
  
 Icasiano, C. B., (649b).  
 Ichinohe, T., (632e).  
 Irfan, M., 696b.  
 Ishii, S., 645c.  
 Iwata, A., 645 o.  
  
 Jamra, M., (709b).  
 Janiszewska, J., 688a.  
 Jantscheff, J., (549a).  
 Jörgensen, G., 676c.  
 Johansson, E., 680b.  
 Jordan, P., 620a.  
 Jorge da Silva, A. A., 672c.  
 Juniper, A. J., 736a.  
  
 Kalapesi, R. M., 635b.  
 Kamiński, A., (547c).  
 Karmanova, G. A., 651b.  
 Kartashev, Z. I., 652k.  
 Kates, K. C., 753m, 753n.  
 Kazakova, A. G., (667e).  
 Kelsheimer, E. G., 694n.  
 Kennedy, P. C., 617a.  
 Khalil, H. A., (641e).  
 Khera, S., 609a.  
 Kikuti, K., (632e).  
 Kips, R. H., (752).  
 Kitazawa, K., 645p.  
 Knight, jr., P. L., 563a.  
 Koppisch, E., 556a.  
 Kosheva, A. F., 667bh.  
 Kouno, I., 597a, (597b).  
 Kovtun, A. S., 667r.  
 Krotov, A. I., 667a, 667bm.  
 Kucherenko, V. P., 651c.  
 Kuhn, G., 693e.  
 Kuntz, R. E., 641h.  
 Kupriyanova, R. A., 619d.  
 Kurochkin, Y. V., 619j.  
 Kurokawa, K., 645a, 645k.  
 Kurtpinar, H., 737a, 737c.  
  
 Lacerda, N. B., (712d), (712i), (712o), (712p), (712u).  
 Lacey, R. J., (727a).  
 Lagrange, E., 566i.  
 Lamy, L., (604a).

Landi, A., **612a**.  
 Lapeysonnie, L., **564a**.  
 Latif, N., **(641a)**.  
 Lawler, G. H., **643b**.  
 Lebrun, A., **566e**.  
 Lee, J. W., **(698b)**.  
 Leo, S. di, **(591g)**.  
 León, P. M., **(717d)**.  
 Lepes, T., **631a**.  
 Letac, R., **(599a)**.  
 Leveuf, J. J., **(566g)**.  
 Levi-Castillo, R., **(713a)**.  
 Liaras, H., **552a**.  
 Libeskind, M., **(601a)**.  
 Lichmanov, N. G., **(667m)**.  
 Lie Kian Joe, **(618a)**.  
 Likhded, S. I., **652g**.  
 Lima, E. C., **(626a)**.  
 Lima, F. M., **633a**.  
 Lima, M. M., **(712a), (712b), (712c), (712w)**.  
 Limakhina, M. A., **667bd**.  
 Lindenberg, S., **(720a)**.  
 Lindhardt, K., **680c**.  
 Lippi, M., **575a, 575b**.  
 Lôbo, A. G. S., **(712t), 712y, 712z, 712ba**.  
 Lobo, M. B., **633c**.  
 Logachev, E. D., **619a, 619k**.  
 Lombera, L., **(717g)**.  
 Lopes de Faria, J., **647a**.  
 Lordello, L. G. E., **559a**.  
 Lucena, D. T. de, **712g**.  
 Lukasiak, J., **547b**.  
 Luz, E., **(712y), (712z), (712ba)**.  
 Lyakhov, S. M., **(667bh)**.  
  
 McMullen, D. B., **649c**.  
 Magalhães Neto, B., **702h**.  
 Magaudda-Borzi, L., **(591e)**.  
 Mahfouz, M. M., **(641g)**.  
 Mahon, J., **565a**.  
 Mai, W. F., **558a**.  
 Makhlina, R. M., **(667bc)**.  
 Maki, T., **632d**.  
 Mañas Cao, A., **(717b), (717c), (717f)**.  
 Manceau, J. N., **(633c)**.  
 Manevich, I. A., **652e**.  
 Mann, K. H., **729a**.  
 Mansard, M., **613a**.  
 Mantovani, G., **(569b)**.  
 Marine Pérez, J., **664a**.  
 Marques, R. J., **593a**.  
 Martín, S., **(717i)**.  
 Martínez Pastor, L., **588a**.  
 Martins, J. S., **(712d), (712f), (712t)**.  
 Martins, O. N., **560g, 560h**.  
 Maruyama, M., **632a**.  
 Marzullo, F., **592a, 592b**.  
 Masoni, S., **(592a)**.  
 Masseguin, A., **566g**.  
 Massouda, B., **(641g)**.  
 Matoff, K., **549a**.  
 Matsumura, T., **630a, 630b**.  
  
 Mattos, E., **(715a)**.  
 Mawson, P. M., **(578c)**.  
 Mayaudon T., H., **719d**.  
 Mazur, J., **670d**.  
 Mazzeo, M., **634a**.  
 Mazzotti, L., **(716a)**.  
 Medeiros, L. do C. M. de, **(560c)**.  
 Melnikova, M. A., **667bj**.  
 Mendheim, H., **734a, 746a**.  
 Mendonça, F., **(722a)**.  
 Merdivenci, A., **(737a), (737c)**.  
 Meriel, P., **574a**.  
 Milanés, F., **(717d)**.  
 Mitchell, F. N., **646a**.  
 Mitchell, J. C., **572a**.  
 Miura, K., **636a**.  
 Miyazaki, I., **654a**.  
 Mohamed, A. S., **641c, 641d**.  
 Mokhur, S. S., **667u**.  
 Mol, L. van, **(752)**.  
 Molina Pasquel, C., **(716a)**.  
 Molinari, V., **544a**.  
 Monné, L., **578a, 578b**.  
 Monroe, R. A., **(639a)**.  
 Montestruc, E., **604b**.  
 Monzini, A., **(612a), (612b)**.  
 Moraes, J. G. de, **(702h)**.  
 Moraes, N. L. de A., **(633c)**.  
 Moreau, G., **(574a)**.  
 Moreiras, M., **(633c)**.  
 Morizono, M., **(638a)**.  
 Morris, R. M., **566c**.  
 Mota, J. N. da, **710a**.  
 Mouton, J., **(723a)**.  
 Mudzhiri, M. S., **667bf**.  
 Müller, K., **(732a)**.  
 Mukvoz, L. G., **667y**.  
 Mulhearn, C. R., **704a**.  
  
 Nachimson, H. I., **698a**.  
 Nakamura, R., **637a**.  
 Nañagás, V. T., **649a**.  
 Narumi, H., **(632d), 632e**.  
 Nasirov, M. R., **667ba**.  
 Navarranne, P., **(660a)**.  
 Nescos, C., **568b**.  
 Nevenić, V., **548a**.  
 Neves, H. A., **712 l.**  
 Newton, H. C. F., **686e**.  
 Nigro, A., **591a, 591b, 591c, 591d, 591i**.  
 Niimi, D., **(597a), 597b**.  
 Nishiyama, S., **638a**.  
 Nolte, K. A., **668a**.  
 Nosik, A. F., **667w**.  
 Nunes Petisca, J. L., **586c**.  
 Nutter, G. C., **(699f)**.  
  
 Ochse, J. J., **694 l.**  
 Oda, T., **(630a)**.  
 Oishi, I., **645d, 645j, 645m**.  
 Olano Vilchez, G., **719e**.  
 Olivier, L., **702e**.  
 Olsen, O. W., **753 l.**  
  
 Ono, Y., **645f**.  
 Orlov, I. V., **651a**.  
 Osawa, M., **(630b)**.  
 Osgood, S. B., **693d**.  
 Oshio, Y., **645g**.  
 Ouden, H. den, **661a**.  
 Overman, A. J., **699g**.  
 Ovnatanyan, K. T., **652i**.  
  
 Pache, H. D., **(676a)**.  
 Pagano, C., **(709b)**.  
 Pan, C., **(636b)**.  
 Panciroli, E., **(687b)**.  
 Panebianco, F., **580a**.  
 Panetsos, A. G., **629a**.  
 Panok, S. Y., **(667y)**.  
 Pantin, J. P., **(552b)**.  
 Paramonov, A. A., **749c**.  
 Park, F. D. R., **699b**.  
 Parnell, I. W., **596a**.  
 Parnitzke, K. H., **551a**.  
 Paroni, F., **(575a)**.  
 Pascual, A. A., **(649a)**.  
 Paskalskaya, M. Y., **619f**.  
 Passalacqua, A., **(591f)**.  
 Paulini, E., **712h**.  
 Payet, M., **599b, 600a**.  
 Pelissier, G., **(552a)**.  
 Peña Garcia, B., **576d**.  
 Pene, P., **(599b), (600a)**.  
 Penson, D., **(566j)**.  
 Pereira, O., **722a, 722b**.  
 Perrotel, P., **605f**.  
 Perumal Pillai, C., **607b, 607d**.  
 Peryassu, A., **633b**.  
 Pesigan, T. P., **(649c)**.  
 Peters, B. G., **706a, 707a**.  
 Petersen, J. H., **(563e)**.  
 Petersen, W. W., **615a**.  
 Petrochenko, V. I., **691a**.  
 Pezzullo, C., **(544a)**.  
 Phillip, P. H., **(639b)**.  
 Pichardo Sarda, M. E., **718b**.  
 Pierotti, P., **568a, 580f**.  
 Pietri, H., **(552b)**.  
 Poberezhnikh, L. I., **667bi**.  
 Podyapolkskaya, V. P., **667x**.  
 Poggi, D. A., **(708b)**.  
 Pohajda, F., **(745a)**.  
 Ponomarev, N. D., **667d**.  
 Pope, A. L., **(639b)**.  
 Porksheyan, O. K., **667bk**.  
 Porter, D. A., **753a, 753b, 753c**.  
 Premaatti, **650a**.  
 Prevost, J. J., **(660c)**.  
 Price, E. W., **753f**.  
 Pricoli, T. I., **720a**.  
 Prieto Lorenzo, A., **663a, 663b, 663c**.  
 Proshin, I. G., **667g**.  
 Prostakova, T. N., **667p**.  
  
 Quattrocchi, G., **575c**.  
 Quesnel, J. J., **(604f)**.  
 Quintana Núñez, F., **666a**.

Rachou, R. G., 712a, 712b,  
     712c, (712d), 712f, 712i,  
     712j, 712m, 712n, 712o,  
     712p, 712q, 712t, 712u,  
     712v, 712w.  
 Ramos, L. O., (720a).  
 Rangel, J. M., (671a).  
 Rao, S. R., (635b).  
 Rathbone, L., 585a.  
 Rathmell, T., 556b.  
 Rees, K. R., (585a).  
 Ribalovski, O. V., 741a.  
 Ricciardi, R., (544a).  
 Rimart, J., (574a).  
 Ríos Reverol, H., 719c.  
 Ritchie, L. S., 636b.  
 Ritter, M., 685a.  
 Ritty, P. M., 699h.  
 Rives, J., 552c.  
 Rizhikov, K. M., 619b.  
 Roby, J., 659b.  
 Rodrigues, F. S., (720a).  
 Rodrigues, G., (579a).  
 Rodrigues da Costa, A., (586a).  
 Romagnoli, A., 568c, 580c,  
     580d.  
 Roman, E., 605d.  
 Romeiro, L., 712r.  
 Rondón, M. F., (628a).  
 Roveda, R. J., 587a.  
 Rowan, W. B., 617b.  
 Rozhkov, A. T., 652b.  
 Rubin, E. L., 595a.  
 Rubinshtain, M. E., 667z.  
 Ruehle, G. D., (694m).  
 Rugai, E., 715a, 715b.  
 Ruiz, J. M., 671a.  
 Russo, G., (575c).  
 Rust, J. H., (693e).  
  
 Sadusk, jr., J. F., 606a.  
 Sakoda, A., 682a.  
 Salamone, L., 627e.  
 Sallnäs, T., 656a.  
 Salutini, E., 580j.  
 Samaja, U., 687a.  
 San Agustin, O. D., 684a.  
 Sandars, D. F., 662a.  
 Sang, H. T., (604c).  
 Sankale, M., (660c).  
 Sano, K., (624a), (624b).  
 Santos, D., (712p).  
 Santos Dias, J. A. T., 560f.  
 Sanyal, P. K., (635a).  
 Sarwar, M. M., (696a), (696b).  
 Sasaki, N., 624a, 624b, 645i.  
 Sasamura, M., (632b).  
 Savary, A., 725a.  
 Savel, J., (603a), (603b), (603c).  
 Scaff, L. M., (712e), (712x).  
 Schipper, A. L., (563a).  
 Schmidt, B. J., (633e).  
 Schmidt, G. H. H., (653a).  
 Schmidt, H. W., (730a), (747a).  
 Schuurmans Stekhoven, jr., J.  
     H., 578c.  
  
 Schwetz, J., 566a.  
 Scognamiglio, A., 567a.  
 Scolari, C., 612b.  
 Scorza, J. V., (576c).  
 Scott, D. M., 643c.  
 Scott, W. B., (643b).  
 Šedivý, J., 745a.  
 Seghetti, L., (753d).  
 Seidel, E., 616a.  
 Sell, O. E., (639c).  
 Semenov, V. S., 652a.  
 Seneviratne, P., (607e), 607f.  
 Senger, C. M., 753d.  
 Serro, R. F., (692a).  
 Shammas, J. A., 642a.  
 Shanmugalingam, K., 607e.  
 Shaw, J. N., 693a.  
 Shcherbinin, I. V., 667bl.  
 Shults, R. S., 749d.  
 Shumard, R., (639b), 753i.  
 Šibalić, S., (548a).  
 Siddiqui, E. H., 696c, 696d.  
 Silva, A., (717a).  
 Simon, 683a.  
 Simon, M., 703a.  
 Simon, F. J., 554a..  
 Sinniah, S. A., 607a.  
 Siurala, M., 545a.  
 Soares, M. A., (720a).  
 Sobiech, T., (670b).  
 Sokolov, N. P., 667bg.  
 Soler Delgado, F., (717c).  
 Soria, M. F., (614a).  
 Southey, J. F., 686a.  
 Souza, P. S., (712q).  
 Spears, J. F., (558a), 755.  
 Sphangos, J. K., 573a.  
 Spindler, L. A., 700a.  
 Staniland, L. N., 728b.  
 Stein, R., 668d.  
 Stewart, T. B., (639c).  
 Stone, W. J., (693d).  
 Stone, jr., W. M., (610a).  
 Stoner, R. D., 557a.  
 Strobl, F., 756.  
 Suárez G., L., (590a).  
 Suit, R. F., 694e, 694g, 694i,  
     (699i), 699j.  
 Swanson, L. E., 610a.  
 Swink, J. F., 692b.  
 Szafir, J. J., (698a).  
 Szidat, L., 614a.  
  
 Taillefer-Grimaldi, J., (566g).  
 Talmage, R. V., 639a, (698a).  
 Tanaka, S., (632d), (632e).  
 Taparelli, F., (592a), (592b).  
 Tarczyński, S., 547a.  
 Tarczyński, T., 670a.  
 Taylor, E. L., 594a.  
 Teló, W., 687b.  
 Texera, D. A., 576c.  
 Thiodet, J., 555a.  
 Thomas, L. J., 727a.  
 Thomson, S., 689a.  
 Thorson, R. E., (581b).

Timofeeva, E. E., 667o.  
 Timoshin, D. G., 667l.  
 Toxopeus, H. J., 655a.  
 Triggiani, L., (634b).  
 Trillo, R., (717h).  
 Trum, B. F., (693e).  
 Tsuhara, Y., 645n.  
 Tsvetaeva, N. P., 741b.  
 Tuiev, S. M., (667ba).  
 Turchins, M. E., 667b.  
 Turner, R. B., (698a).  
  
 Ulsen, F. W. van, 735b.  
 U.S. Livestock Sanitary Association, 700b.

Vappula, N. A., 680a.  
 Vatolina, M. K., 667i.  
 Vegors, H. H., (639c).  
 Velozo, H. A., 709a.  
 Vendramini, R., 591e.  
 Vianna, Y. L., 739a.  
 Villegas J., R., (721a).  
 Vishnevskaya, S. M., 667s.  
 Vitale, G., 580e.  
 Vloten, J. G. C. van, 735a.  
 Vogelsang, E. G., (719a),  
     (719b).

Wachsmuth, R., 551b.  
 Waddington, J. K. B., (595a).  
 Wallace, A. T., 699a.  
 Walt, F., 731a.  
 Watanabe, S., 645e.  
 Watson, E. V., (729a).  
 Weatherford, T. W., 581a.  
 Wetzel, R., 675a, 719a, 719b.  
 Whitwell, F., (595a).  
 Willey, C. H., 563c, (563d).  
 Willm, A., (660c).  
 Winterhalter, M., 742a.  
 Wolfgang, R. W., 643d, 643e.  
 Wood, R. R., 692a.

Yamaguti, S., 546a, 546b, 546c.  
 Yasuda, M., (632d).  
 Yokogawa, M., (636b).  
 Yoshida, T., 645b.  
 Young, T. W., 694m.

Zakhary, R., (641b).  
 Zakhrudnik, I. D., (667bi).  
 Zakrzewski, A., (670b).  
 Zaleski, J., (670d).  
 Zamith, A. P. L., (559a).  
 Zhukov, N. M., 667e, 667v.  
 Zöllner, W., 669b.  
 Zorina, I. P., 619h.

## INDEX OF SUBJECTS

(The reference is to the serial number: numbers in **bold** type indicate abstracts.)

*Acanthocheilonema perstans* in man in Tanganyika

**620a.**

*Actinolaimus chitwoodi*, male described **578c.**

*Acuaria nasuta* in *Columba* in Italy **568b.**

*Amidostomum anseris* in goose in Poland **547d.**

*Ancylostoma duodenale* in man in Italy **634a.**

— Spain, general account **663a,**  
**663b, 663c.**

— — — , treatment **627e.**

— — — , mucinase demonstrated **591f.**

— — — in rabbit, experimental immunity **682a.**

— *paraduodenale* in *Felis* **681a.**

*Ancylostomiasis* in man **627b.**

— — — ,  $\alpha$ -bromo- $\beta$ -naphthol **636a.**

— — — , control **627c.**

— — — , diagnosis **591e.**

— — — , Hydroxylen **575b.**

— — — in Italy **575c, 627a.**

— — — , notezine **660d.**

— — — , tetrachlorethylene **718b.**

— — — in Venezuela **576d.**

**Anthelmintics.** Ascarisin **668e;** atebrin **631a,**

**668a;** Azacrin **716a;**  $\alpha$ -bromo- $\beta$ -naphthol

**636a;** cadmium oxide **698b;** camoquin

**566j;** carbon tetrachloride **670c, 705a,**

**742a;** caricide **658a;** cashew nut-shell oil

**635a;** chenopodium oil **667bc;** chloroquine

**608a;** chloroquine diphosphate **717g;** corti-

sone **606a;** dichlorphenarsine hydrochloride

**645d;** emetine **574a;** fixilan **667j;** hexazan

**659a,** **712m;** hexachlorethane **607c;**

Hydroxylen **575b;** Minel **737d;** nematolyt

**734a;** not affecting glycolysis in *Ascaris*

*lumbricoides* **585a;** notezine **660d;** phenothiazine

**551b, 605a, 605f, 610a, 639a, 639b,**

**698a, 737b, 753a;** piperazine adipate **717f;**

piperazine diphenylacetate **604c;** piperazine

hexahydrate **717c;** piperazine hydrate **604c,**

**715d;** pumpkin seeds **741a;** *Punica granatum*

extracts **667bf;** reviewed **648a;** *Ricinus*

*communis* seeds **670d;** sankafen **667i;**

santonin **667i, 667bb;** Stronglamine **605c;**

Supatonin **645j,** **645m;** tetrachlorethylene

**718b;** tetracyclin tested **604d;** tin com-

ounds **547c;** various **605b, 721a;** vegetable

oils & constituents tested **724a;** Vermella

**668d;** whipcide **658b.**

*Aphelenchooides* spp. in strawberry **680c.**

— *besseyi* in rice, control **577a.**

— *cocophilus* redescribed **559a.**

— *ritzema-bosi* in *Callistephus* **686f.**

— — — tomato **686f.**

*Aplectana* n.sp. in *Hyla* **672c.**

Ascarisis & dysentery in man **667x.**

— in man **667c, 667d, 667e.**

— — — , control **667v.**

— — — , notezine **660d.**

— — — , piperazine adipate **717f.**

— — — , — diphenylacetate **604c.**

— — — , hexahydrate **717c.**

Ascarasis in man, piperazine hydrate **604c.**

— — — , sankafen **667i.**

— — — , santonin **667i, 667bb.**

— — — pig **645c.**

*Ascaridia columbae* in *Columba* in Turkey **737c.**

— *galli* ova, effect of temperature on development  
**696d.**

— — — , technique for culturing **696c.**

Ascarids in cat, santonin **667bb.**

— — — dog, Supatonin **645m.**

— — — domestic animals, treatment **605b.**

*Ascaris* & appendicitis in man **652i.**

— in bile & pancreatic ducts in man **576b.**

— — — ear of man **626a.**

— & intestinal occlusion in man **669a.**

— in man **667u.**

— — — , longevity of infection **667t.**

— & mental disturbance in man **676c.**

— ova, control **630b.**

— killed by mixture of faeces & urine **630a.**

— & pancreatitis in man **652c.**

— *lumbricoides*, amino-acid metabolism **603c.**

— — — , amino nitrogen **603b.**

— — — in bile-duct of man **632c.**

— — — cattle, larval migration **617a.**

— — — , effect of *Ricinus communis* seeds *in vitro*  
**670d.**

— — — , glycolysis demonstrated **585a.**

— — — , not affected by anthelmintics **585a.**

— — — & intestinal occlusion in man, treatment  
**717a.**

— — — in man, Ascarisin **668e.**

— — — , eosinophilia **653a.**

— — — of man & pig, differentiated **618a.**

— — — ova initiating gall-stones **632a, 632b.**

— — — in pig, cadmium oxide **698b.**

— — — of pig, structure of intestinal cells **697a.**

— — — ureagenesis **603a.**

— — — & visceral granulomata, erroneous identifi-

cation **556a, 556b.**

*Australorbis* spp., biological control **576c, 672a.**

— *glaberratus* attacked by bacteria **576c.**

— — — biology **722b.**

— — — control **709a.**

— *tenagophilus*, biology **712r.**

Bacteria attacking *Australorbis glaberratus* **576c.**

*Belonolaimus gracilis* in clover, experimental  
**699e.**

— — — strawberry, general account **699d.**

— — — on sugar-cane **695a.**

**Biology.** *Australorbis glaberratus* **722b;** *Australor-*

*bis tenagophilus* **712r;** *Cercaria maritrematis*

**619c;** *Cercaria pseudarmata* **619h;** *Cercaria*

**secunda** **619h;** *Macracanthorhynchus catulinus*

**619b;** *Mediorhynchus micracanthus* **619b;**

*Stephanostomum baccatum* metacercariae

**643e.**

**Bionomics.** *Nematodirus spathiger* **753d;** planor-

bids **712s;** schistosome intermediaries **604g.**

*Caenorhabditis briggsae*, physiology 563b.  
*Camallanus lacustris*, life-history 619d.  
 — *truncatus*, life-history 619d.  
*Capillaria* in poultry in Holland 735b.  
 — *aerophila* in cat in Uruguay, first record 562c.  
 — *columbae* in *Columba* in Turkey 737c.  
 — *hepatica* in dog in Brazil 739a.  
 — — — *Myocastor* 616a.  
*Caryophyllaeidae* in Europe, reviewed 688a.  
*Cephalogonimus retusus* in *Rana esculenta* in Poland 547e.  
*Cercaria* n.spp. in *Melanoides tuberculata* 650a.  
 — *maritrematis*, biology & life-history 619c.  
 — *pseudarmata*, biology 619h.  
 — *secunda*, biology 619h.  
*Cercariae* in *Australorbis tenagophilus* in Brazil 715b.  
*Cestodes* in animals in Belgian Congo, new records 565a.  
*Cestodes*, cytology 619a.  
 — in man, general account 664a.  
 — — —, *Punica granatum* extracts 667bf.  
 — — —, tin compounds 547c.  
*Chemistry*, root diffusates 692a.  
*Choanotaenia* n.sp. in *Bubo* 565a.  
*Coenuriasis* in sheep, treatment 651c.  
*Collembola* attacking eelworms 621a.  
*Concinnum brumptii* n.var. in *Pan* 604e.  
*Contracaecum* n.sp. in *Arius* 546b.  
**Control.** *Ancylostomiasis* 627c; *Aphelenchoides besseyi* 577a; *ascariasis* 667v; *Ascaris ova* 630b; *Australorbis* spp. 672a; *Australorbis glabratus* 576c, 709a; *Culex fatigans* 712a; *Cysticercus bovis* 612a; *Diphyllobothrium latum* 612b; *Dipylidium caninum* 693c; eelworms in plants 553a, 706a, 728b; *Fasciola hepatica* metacercariae 645f; helminthiasis 667q, 667r, 667s; helminths in cattle 610a; helminths in domestic animals 675a; helminths in duck 691a; helminths in sheep 651a; hydatidosis 629a; liver-fluke 656a; onchocerciasis 566e, 566f, 566g; *Radopholus similis* 694i, 694j, 694k; *Radopholus similis* & spreading decline 694e, 694f; schistosome intermediaries 604a; snails 672b; *Trichinella* 693e, 756; trichineliasis 589a; water weeds 699b.  
*Crossotaenia* n.g., n.sp. in *Cephalobus* 565a.  
*Crustaceans* attacking snails 604a.  
*Cucullanus* n.sp. in *Lates* 546b.  
 — — — *Siganus* 546b.  
 — — — spp. in *Arius* 546b.  
*Culex fatigans*, control 712a.  
*Cysticerciasis* in cattle, simulated by muscle necrosis 657a.  
*Cysticerciasis*, cerebral, in man 551a, 667bk.  
 — in man 544a, 649b.  
*Cysticercus bovis*, effect of freezing 612a.  
 — *talpae* in *Myocastor* 571a.  
**Cytology.** *Ascaris lumbricoides* 697a; cestodes 619a; *Diphyllobothrium latum* 619k; nematode ova 613a; *Parascaris equorum* 623a.  
*Dactylaria* n.sp. attacking eelworms 736a.  
*Dactylogyrus* n.sp. on *Hypophthalmichthys* 619i.  
**Diagnosis.** *Ancylostomiasis* 591e; *Dirofilaria immitis* 581a; *Enterobius* 633a; fascioliasis 645b; helminths in man 687a; helminths in sheep 568c; schistosomiasis 711a; *Taenia saginata* 570a, 690b; *Wuchereria bancrofti* 712k.  
*Dibothriorhynchus* sp. in man in South Africa 713b.  
*Dicrocoelium dendriticum* in U.S.A. 753f.  
*Dictyocaulus* in sheep, pathology 741b.  
 — *viviparus* in cattle 645o.  
*Dilepis* n.sp. in *Bycanistes* 565a.  
*Diphyllobothrium* anaemia & gastric lesions in man 545a.  
 — *latum*, cytology 619k.  
 — — — in *Perca*, effect of freezing 612b.  
*Dipylidium* in man 667p.  
 — *caninum* in dog, control 693c.  
*Dirofilaria* in dog, dichlorphenarsine hydrochloride 645d.  
 — — —, surgery 645a, 645k.  
 — *immitis* in dog, diagnosis & treatment 581a.  
 — — —, treatment 684a, 740a.  
 — *repens* in man 667 m.  
*Ditylenchus destructor* in U.S.A. 755.  
 — *dipsaci* in clover 683a, 686d.  
 — — — potato & other plants 686e.  
 — — — sugar-beet & other plants 686c.  
 — — — in Switzerland 725a.  
*Drepanidotaenia lanceolata* in goose, pumpkin seeds 741a.  
  
*Echinococcus* in Russia 667bg.  
 — *granulosus* in dog in Spain 588a.  
 — — —, epidemiology 667w.  
 — — — in fox, experimental 549a.  
 — — — wolf, experimental 549a.  
*Eelworms* attacked by *Collembola* 621a.  
 — — — *Dactylaria* n.sp. 736a.  
 — — — fungi 677a.  
 — on avocado 694m.  
 — in citrus 699i.  
 — on *Gladiolus*, general account 694n.  
 — in grass 699f.  
 — — —, Nemakril 699g, 699h.  
 — — —, VC 1-13 699g.  
 — — — plants in Colombia, control 553a.  
 — — —, control 706a, 728b.  
 — — — in Finland 680a.  
 — — —, resistance, literature reviewed 733a.  
 — — — in Sweden, research 680b.  
 — of plants, types of life-history 749c.  
 — in plants in U.S.A. 755.  
 — red clover, resistance 584a, 686b.  
 — — —, technique for determining viability of 699c.  
 — free-living, from Asia 578c.  
 — — —, in Europe 726a.  
 — — —, from Spain, new records 701a.  
*Enterobiasis* & appendicitis in man 667bi.  
 — in man, piperazine adipate 717f.  
 — — —, — diphenylacetate 604c.  
 — — —, — hexahydrate 717c.  
 — — —, — hydrate 604c, 715d.  
 — — —, — tetracyclin 604d.  
*Enterobius* in man, diagnosis 633a.  
 — ova in nodules in man 748a.  
 — *vermicularis* & appendicitis in man 714a.  
 — — in man 690a.

**Epidemiology.** *Echinococcus granulosus* 667w; hydatidosis 667w; trichinellosis 730a, 747a. *Epomidiostomum anatinum* in duck, life-history 619j.

*Erpobdella octoculata* in man 667bh.

*Eurytrema pancreaticum* in cattle in Venezuela, first record 719d.

*Fasciola* in pig, carbon tetrachloride subcutaneously 742a.

— spp. in Japan 645e.

— *hepatica* in cattle & sheep 738a.

— — man 649a.

— — — chloroquine diphosphate 717g.

— — — — emetine 574a.

— — — — treatment 717h, 717i.

— — — metacercariae, control 645f.

Fascioliasis in cattle in Japan 645p.

— — — pig in Yugoslavia 743a.

— — — sheep 670b.

— — — carbon tetrachloride subcutaneously 670c.

— — — & goat, diagnosis 645b.

Filariasis in man in China 644a.

— — — nervous symptoms 660b.

— — Supatonin 645j.

Fungi attacking eelworms 677a.

**Geographical Distribution.** Africa 566a; Alaska 727a; Arctic 730a, 747a; Argentina 587a; Australia 583a, 662a, 704a; Belgian Congo 565a, 566b, 566e, 566h; Brazil 593a, 633b, 633c, 671a, 702a, 712b, 712c, 712d, 712i, 712m, 712o, 712p, 712t, 712u, 712v, 712w, 712x, 712y, 712z, 712ba, 712bb, 715b, 715c, 715e, 739a; Britain 596a, 707a, 729a; Canada 572a, 643a; Cape Verde Islands 560g, 560h; Celebes 546b, 546c; Ceylon 607a, 607c, 607d, 607e, 607f; China 644a; Colombia 553a; Czechoslovakia 745a; Dominican Republic 718a; Ecuador 713a; Egypt 641i; Eritrea 580g; Europe 688a, 726a, 754; Finland 680a; France 601a; French West Africa 564a, 566g; Germany 674a; Greece 573a; Holland 735b; India 635b; Ireland 728a; Italy 568b, 575c, 580e, 580f, 592b, 627a, 627d, 627f, 634a, 634b; Japan 546a, 597a, 597b, 632d, 632e, 636b, 645e, 645l, 645n, 645p, 654a; Madagascar 604f; Mozambique 560a, 560b, 560f, 566d; Near East 641f; North America 643b; Peru 554a, 590b, 625a; Philippines 649c; Poland 547a, 547d, 547e; Portugal 586b; Russia 667q, 667r, 667s, 667bg, 667bm, 749a, 749e; Senegal 600a; South Africa 713b; Southern Rhodesia 566c; Spain 588a, 663a, 663b, 663c, 701a; Sweden 656a, 680b; Switzerland 725a; Tanganyika 620a; Turkey 737a, 737c; U.S.A. 693a, 693d, 700b, 753f, 755; Uruguay 562c; Venezuela 576d, 628a, 673a, 719c, 719d, 719e; Yugoslavia 548a, 743a.

*Globocephalus* n.sp. in monkey 546c.

*Gnathostoma* spp. in Japan, life-history 654a.

*Habronema megastoma* in horse, experimental 638a.

**Haematology.** *Ascaris lumbricoides* 653a; helminths in cattle 568d; helminths in man 604b; hydatid 580c, 580d; hydatid in cattle 569a, 569b, 591g; liver-fluke 580c, 580d; *Neoascaris vitulorum* 580a; *Opisthorchis* 667bd; *Schistosoma mansoni* 709b; *Taenia saginata* 668c.

*Haemonchus contortus* in sheep 753g.

— — — — effect of phenothiazine & mineral supplements 639b.

— — — & *Trichostrongylus axei* in sheep, pathogenic interaction 753n.

*Hamatospiculum* for *Parhamatospiculum* 744a.

— transferred to Dipetalonematinae 744a.

*Hasstilesia tricolor* in rabbit, life-history 617b.

Helminth ova & larvae on strawberry 667h.

— — — — technique for detecting 667k.

— — — — technique for collecting 715a.

— — — — from faeces 609b.

— — — — on vegetables 667f.

— — — — specimens, technique for preparing 667l.

Helminthiasis in Russia, control 667g, 667r, 667s.

Helminthology in Australia 704a.

Helminths in animals in Argentina, bibliography 587a.

— — — — effect of age on susceptibility 605e.

— — — — of animals, host-parasite relationships 749d.

— — — — in animals, nematolyt 734a.

— — — — & appendicitis in man 641e.

— — — — in buffalo in Ceylon 607e.

— — — — cattle 753h.

— — — — control 610a.

— — — — effect of diet on worm burden 639c.

— — — — in Italy, economic loss 580e.

— — — — serum proteins 568d.

— — — — & sheep in U.S.A. 693a.

— — — — & coccidia in cattle 753b.

— — — — diarrhoea in man, treatment 717b.

— — — — in dog in Venezuela 719c.

— — — — domestic animals in Ceylon 607f.

— — — — control reviewed 675a.

— — — — general account 719a.

— — — — in Mozambique 560f.

— — — — U.S.A., economic loss 700b.

— — — — duck, control 691a.

— — — — & eosinophilia in animals 586c.

— — — — in equines, general account 719b.

— — — — fish in Canada 643a.

— — — — goat in Ceylon 607c.

— — — — *Lepus* in Yugoslavia 548a.

— — — — liver of sheep, diagnosis 568c.

— — — — man & animals in Russia 667bm.

— — — — in Brazil 593a, 633b, 633c, 712bb, 715c.

— — — — cashew nut-shell oil 635a.

— — — — domestic animals as reservoirs 605d.

— — — — effect on intestinal mucosa 667b.

— — — — eosinophilia 604b.

— — — — histopathology 717d.

— — — — immunological diagnosis 687a.

— — — — in Italy 592b, 634b.

— — — — Japan 636b.

— — — — Mozambique 560b.

— — — — research reviewed 676a.

Helminths in man, treatment reviewed 668b.  
— — — pigeon 735a.  
— — — , treatment 586a.  
— — — poultry, carbon tetrachloride 705a.  
— — — rat 746a.  
— — — ruminants, effect of grazing habits 594a.  
— — — , Minel 737d.  
— — — sheep in Britain, seasonal variation 596a.  
— — — , control 651a.  
— — — in Germany 674a.  
— — — Portugal, treatment 586b.  
— — — , seasonal variation 651b.  
— — — technique for collecting from cattle 753c.  
— — — — diagnosing 667a.  
*Heterodera cacti* on *Coryphantha* 686a.  
— *glycines* in U.S.A. 755.  
— *rostochiensis* cysts, effect of nematicides 752.  
— — — technique for collecting from soil 554a.  
— — — , effect on root tissue 563d.  
— — — in Europe, distribution 754.  
— — — Ireland 728a.  
— — — Peru 554a.  
— — — potato in Czechoslovakia 745a.  
— — — — general account 558a.  
— — — — resistant hybrids with *Solanum andigenum* 655a.  
— — — soil, D-D 678a.  
— — — — effect of pH 703a.  
— — — — P4 678a.  
— — — *Solanum*, resistance 622a.  
— — — technique for making surveys 750.  
— — — in U.S.A. 755.  
— *schachtii* cysts, technique for studying hatching 661a.  
— — — in plants, root diffusates 692a.  
— — — soil, effect of pH 703a.  
— — — sugar-beet, resistance 692b.  
— *tabacum* in U.S.A. 755.  
*Heterophyes heterophyes* in man in Greece, first record 573a.  
*Hirudinea* in Britain 729a.  
— on man, allergic reactions 687b.  
— physiology 591a, 591b, 591c, 591d, 591e.  
*Hookworm* anaemia in man 717e.  
*Hookworm* in man in Cape Verde Islands 560g.  
**Host Animals.** *Ailurus* 681a; *Alces* 753e; *Alectoris* 737a; animals 546c, 565a, 586c, 587a, 605e, 645l, 667bm, 702g, 727a, 734a; animals, domestic 560f, 588a, 605b, 605d, 607f, 639a, 645g, 675a, 698a, 700b, 719a; animals, laboratory 566i, 641h; *Arius* 546b; *Australorbis* 715b; *Bubo* 565a; buffalo 607a, 607e; *Bufo* 636a; *Bycanistes* 565a; *Caiman* 671a; cat 562c, 566h, 635b, 667o, 667bb, 667bl; cattle 568d, 569a, 569b, 580a, 580e, 581b, 591g, 597a, 597b, 610a, 617a, 639c, 645n, 645o, 645p, 656a, 693a, 719d, 719e, 738a, 753a, 753b, 753c, 753h; *Cebus* 713a; *Cephalobius* 565a; *Cervus* 547a; *Columba* 568b, 737c; *Corvus* 604f; *Cricetomyia* 565a; *Didelphis* 702a; dog 569c, 580b, 580j, 581a, 588a, 645a, 645d, 645k, 645m, 658a, 658b, 684a, 693c, 719c, 723a, 739a, 740a; duck 619j, 691a; *Epomophorus* 565a; equines 719b; *Felis* 681a; fish 546b, 643a, 643b, 643d; fox

549a; *Gadus* 643c; *Glyptosternum* 749b; goat 607c, 645b; goose 547d, 741a; *Gymnobucco* 565a; *Gypohierax* 565a; *Herpestes* 681a; horse 568a, 580f, 605a, 605f, 607b, 624a, 624b, 637a, 638a, 645i; *Hyla* 672c; *Hoplophthalmichthys* 619i; *Lates* 546b; *Leptodactylus* 614a; *Lepus* 548a; *Liophis* 671a; *Macacus* 546c; mammals 546a; man 544a, 545a, 547c, 551a, 551b, 552a, 552b, 552c, 555a, 560a, 560b, 560g, 560h, 561a, 564a, 566b, 566c, 566d, 566e, 566f, 566g, 566h, 566j, 572a, 573a, 574a, 575a, 575b, 575c, 576a, 576b, 576d, 579a, 591e, 592a, 592b, 593a, 599a, 599b, 600a, 601a, 604b, 604c, 604d, 605d, 606a, 608a, 615a, 620a, 626a, 627a, 627b, 627c, 627d, 627f, 627e, 628a, 631a, 632c, 632d, 632e, 633a, 633b, 633c, 633d, 634a, 634b, 635a, 636a, 636b, 641c, 641d, 641e, 641g, 642a, 644a, 646a, 647a, 649a, 649b, 649c, 652a, 652b, 652c, 652d, 652e, 652f, 652g, 652h, 652i, 652j, 652k, 653a, 659a, 659b, 660a, 660b, 660c, 660d, 662a, 663a, 663b, 663c, 664a, 665a, 666a, 667c, 667d, 667e, 667f, 667j, 667m, 667n, 667p, 667t, 667u, 667v, 667x, 667y, 667z, 667za, 667bb, 667bd, 667be, 667bf, 667bh, 667bi, 667bj, 667bk, 667bm, 668a, 668b, 668c, 668d, 668e, 669a, 669b, 676a, 676b, 676c, 679a, 687b, 690a, 690b, 693d, 708a, 708b, 708c, 709b, 710a, 711a, 711b, 712b, 712c, 712d, 712e, 712f, 712m, 712o, 712p, 712t, 712u, 712v, 712w, 712x, 712ba, 712bb, 713b, 714a, 715c, 715d, 716a, 717a, 717b, 717c, 717d, 717e, 717f, 717g, 717h, 717i, 718a, 718b, 720a, 721a, 731a, 748a; *Melanoides* 650a; monkey 546c; mouse 547b, 557a, 693b; *Myocastor* 571a, 616a; *Mystus* 609a; *Otis* 565a; *Pan* 604e; *Perca* 612b; *Perdix* 737a; pig 562a, 562b, 605c, 607d, 615a, 645c, 698b, 700a, 742a, 743a, 749e; pigeon 586a, 735a; poultry 705a, 735b; *Pseudopleuronectes* 643e; *Pternistes* 681a; *Pycnonotus* 565a; rabbit 617b, 682a; *Rana* 547e; rat 563e, 602a, 746a; *Rattus* 550a, 702b; reptiles 671a; ruminants 594a, 737b, 737d, 749a; *Sagitta* 598a; *Scotophilus* 550a; sheep 568c, 580c, 580d, 586b, 596a, 639b, 645b, 651a, 651b, 651c, 670b, 670c, 674a, 693a, 738a, 741b, 753g, 753i, 753j, 753m, 753n; *Siganus* 546b; *Silurus* 749b; wolf 549a; zebu 580g.  
**Host Plants.** Avocado 694m; *Callistephus* 686f; carnation 567a; citrus 611a, 694a, 694b, 694d, 694e, 694f, 694g, 694h, 694i, 694j, 694k, 699i; clover 683a, 686d, 699e; clover red 584a, 686b; *Coryphantha* 686a; cotton 590b, 625a; *Gladiolus* 694n; grass 699f, 699g, 699h; peach 583a; plants 553a, 590a, 611b, 680a, 680b, 686c, 686e, 694c, 694l, 699j, 706a, 728b, 733a, 755; potato 558a, 655a, 686e, 745a; rice 577a; *Solanum* 622a; soya bean 715e; strawberry 680c, 699d; sugar-beet 686c, 692b, 725a; sugar-cane 695a; tobacco 699a; tomato 685a, 686f.

**Hydatid in animals in Alaska** 727a.  
 —— brain of man 642a.  
 —— cattle, effect on serum 591g.  
 —— haematology 569a, 569b.  
 —— cysts, sedimentation rate of scolices 582a.  
 —— in domestic animals in Spain 588a.  
 —— horse 568a.  
 —— in Italy 580f.  
 —— man 552a, 552b, 552c, 561a, 575a, 652a, 652b, 652d, 652e, 652f, 652g, 652h, 652j, 652k, 659b, 679a, 708a, 708b, 708c.  
 —— in Italy 672d, 672f.  
 —— treatment 555a.  
 —— pig 562a, 562b.  
 —— in Yugoslavia 743a.  
 —, pulmonary, simulated by abscess 595a.  
 — in sheep, haematology 580c, 580d.

**Hydatidosis**, control 629a.  
 —, epidemiology 667w.  
 — in Russia 667bg.

**Hymenolepis** & dysentery in man 667y, 667z.  
 — in man, filian 667j.  
 — n.sp. in *Epomophorus* 565a.  
 — *diminuta* in man 667n, 667bj.

**Idiogenes** n.sp. in *Otis* 565a.

**Immunity.** *Ancylostoma duodenale* 682a; eel-worms in plants 733a; eelworms in red clover 584a, 686b; *Heterodera rostochiensis* 622a, 655a; *Heterodera schachtii* 692b; *Meloidogyne* 590a, 699a; *Radopholus similis* 694g, 694h; *Trichinella spiralis* 557a, 563e.

**Inermicapsifer** n.sp. in *Cricetomyia* 565a.

**Kumri** in horse 607b.

**Lecithodendrium** spp. to *Longitrema* 550a.

**Life-histories.** *Camallanus lacustris* 619d; *Camallanus truncatus* 619d; *Cercaria maritrematis* 619c; eelworms 749c; *Eponidiostomum anatinum* 619j; *Gnathostoma* spp. 654a; *Hasstilesia tricolor* 617b; *Macracanthorhynchus catulinus* 619b; *Macracanthorhynchus hirudinaceus* 749e; *Mediorhynchus micracanthus* 619b; *Nematodirus spathiger* 753m; *Neoascaris vitulorum* 696b; *Notocotylus chionis* 619e; *Parapronocephalum symmetricum* 619g; *Plagiorchis arcuatus* 619f; *Schistosoma turkestanicum* 696a; *Thysanosoma* 753 l; *Thysanosoma actinioides* 753k.

**Limnaea**, molluscicides tested against 645h.

**Linnomermis** n.sp. 578c.

**Liver-fluke** in cattle in Sweden, economic loss & control 656a.  
 —— sheep, haematology 580c, 580d.  
 —— technique for diagnosing 670a.

**Longitrema** for *Lecithodendrium* spp. 550a.  
 — n.g. for *Prosthodendrium piriforme* 550a.

**Lungworms** in ruminants in Russia 749a.  
 —— sheep 753j.

**Macracanthorhynchus catulinus**, biology & life-history 619b.  
 —— *hirudinaceus* in pig in Russia, life-history 749e.

**Mansonella ozzardi** in man in Brazil 712d, 712m, 712p, 712x.  
 —— microfilaria, morphology 712q.  
 —— — no periodicity 712i.

**Mediorhynchus micracanthus**, biology & life-history 619b.

**Meloidogyne** in carnation, D-D 567a.  
 — in plants, effect of *Crotalaria* 694l.  
 —— — resistance 590a.  
 —— tobacco, resistance & leaf width linked 699a.  
 —— tomato, ethylene dibromide 685a.  
 — spp. in soya bean in Brazil 715e.  
 — *incognita* var. *acrita* in cotton in Peru 590b, 625a.  
 — *javanica* in peach in Australia 583a.

**Mesocestoides** sp. in cat in Belgian Congo 566h.  
 —— man in Belgian Congo 566h.

**Metaceraria** n.sp. in *Sagitta* 598a.

**Metastrongylus** spp., physiology 563a.

**Metathelazia exilis** in *Herpestes* 681a.  
 — servals in *Felis* 681a.

**Metroliasthes lucida** in *Perdix* & *Alectoris* in Turkey 737a.

**Microfilaria** in *Cebus* in Ecuador 713a.  
 — *Corvus* in Madagascar 604f.

**Microfilariae** in man, key for identification 712f.  
 — & skin disease in horse 624a, 624b, 637a.

**Molluscicides.** Bacterial culture 672b; chemicals tested 641a; comparative cost 712h; copper compounds 702h; effect of temperature on activity 641b; pentachlorophenol 712h; sodium pentachlorophenate 722a; various, tested 645h.

**Morphology.** *Actinolaimus chitwoodi* 578c; *Aphelenchoides cocophilus* 559a; *Ascaris lumbricoides* of man & pig 618a; *Mansonella ozzardi* microfilaria 712q; microfilariae 712f; planorbids 712g; *Planorbis metidjensis* 560c; *Schistosoma bovis* 560d; *Wuchereria bancrofti* microfilaria 712q; *Zygocotyle lunata* 563c.

**Moniezia expansa** in cattle in Venezuela, first record 719e.

**Nematicides (plant eelworm).** D-D 567a, 678a, 694e, 694f; 1,3-dichloropropene 640a; ethylene dibromide 685a; Nemakril 699g, 699h; P4 678a; VC 1-13 699g; various 752.

**Nematode ova**, cytoplasmic inclusions 613a.  
 —— structure of shell 578b.

**Nematodes** in animals in Celebes 546c.  
 —— fish in Celebes 546b.

**Nematodes** & gastro-enteritis in cattle 581b.  
 — in horse, phenothiazine 605f.  
 —— mammals in Japan 546a.  
 —— man, treatment 721a.  
 —— pig, Stronglamine 605c.  
 —— sheep 753g.  
 —— — effect on digestion 753i.  
 —— vegetable oils tested against 724a.

**Nematodirus spathiger**, bionomics 753d.  
 —— in sheep, life-history 753m.

**Nematology**, research in Britain 707a.

**Nematospirodes dubius** in mouse, pathology 693b.

*Neoascaris* in buffalo in Ceylon 607a.  
 — *vitulorum* in cattle, haematology 580a.  
 — — ova, development 696b.  
 — — —, effect of gastric juice *in vitro* 580h.  
*Notocotylus chionis*, life-history 619e.

*Oesophagodontus robustus* in Venezuela 673a.  
*Onchocerca cervicalis* in horse, seasonal variation 645i.  
 — *gibsoni* in zebu in Eritrea 580g.  
 — *gutturosa* in cattle in Japan 597a.  
 — — — —, pathology 597b.  
 — *volvulus* & skin lesions in man in French West Africa 564a.  
*Onchocerciasis* in man in Belgian Congo, control 566e.  
 — — —, control 566f.  
 — — — in French West Africa, control 566g.  
 — — — Venezuela 628a.  
 — — —, ocular, in man, hetrazan 659a.  
*Ophiotaenia* sp., plerocercoid in *Leptodactylus 614a*.  
 — n.sp. in *Leptodactylus 614a*.  
*Opisthorchis* in man, haematology 667bd.  
 — *felinus* & cancer in dog 580b, 580j.  
 — in cat 667o, 667bl.

*Parafilaria acutiuscula* in dog, treatment 569c.  
*Paragendria* n.sp. in *Mystus 609a*.  
*Paragonimiasis* in man, chloroquine 608a.  
*Parapronocephalum symmetricum*, life-history 619g.  
*Parasarcis equorum* oocyte, chemistry of hyaline spheres 623a.  
 — — ova, effect of irradiation 732a.  
*Parasites* in animals in Japan 645l.  
*Parasitology*, veterinary (text book) 751.  
*Paratrombosolus* n.g., n.sp. in *Silurus* & *Glyptosternum 749b*.  
*Parhamatospiculum* to *Hamatospiculum 744a*.  
*Paronchocerca rousseloti* in *Pternistis 681a*.  
**Pathology.** *Dictyocaulus 741b*; helminths in man 667b, 717d; *Heteroderma rostochiensis 563d*; *Nematospirodes dubius 693b*; *Onchocerca gutturosa 597b*; *Schistosoma mansoni 702b, 702g*; *Spirocera sanguinolenta 723a*.  
*Petalodiplostomum* n.sp. in *Liophis 671a*.  
*Physaloptera tumefasciens* n.subsp. in *Macacus 546c*.  
**Physiology.** *Ancylostoma duodenale 591f*; *Ascaris lumbricoides 585a, 603a, 603b, 603c*; *Caenorhabditis briggsae 563b*; *Hirudinea 591a, 591b, 591c, 591d, 591i*; *Metastrongylus spp. 563a*.  
*Plagiorchis arcuatus*, life-history 619f.  
*Planorbid* populations, effect of chemical composition of water 712s.  
*Planorbids* in Brazil 712y.  
 — — —, distribution 712z.  
 — — —, morphology 712g.  
*Planorbis metidjensis*, morphology 560c.  
 — — var. *dufouri*, intermediary for *Schistosoma haematobium* 560e.  
*Plectus* n.sp. 578c.  
*Polymorphus* spp., chemistry of embryonic envelopes 578a.

*Porrocaecum decipiens* larvae in *Gadus 643c*.  
*Pratylenchus brachyurus* in clover, experimental 699e.  
*Procamallanus* n.sp. in *Siganus* sp. 546b.  
*Prosthodendrium* emended 550a.  
 — n.sp. in *Rattus 550a*.  
 — — — — *Scotophilus 550a*.  
 — — *ovimagnosum* n.var. in *Scotophilus 550a*.  
 — — *piriforme* to *Longitrema* n.g. 550a.  
*Pseudoneodiplostomum* n.sp. in *Caiman 671a*.

*Radopholus similis* in citrus, control 694i, 694j, 694k.  
 — — — — —, resistance 694g, 694h.  
 — — — on plants 699j.  
 — — — in plants, host range 611b, 694c.  
 — — — & spreading decline in citrus 611a, 694a, 694b, 694d.  
 — — — — —, control 694e, 694f.  
 — — — in U.S.A. 755.  
*Railletina* n.sp. in *Gymnobucco 565a*.  
 — — — — *Gypohierax 565a*.  
 — — — — *Pycnonotus 565a*.  
 — — *echinobothrida* in *Perdix* & *Alectoris* in Turkey 737a.  
*Rhabdias bufonis* in *Bufo*; anthelmintics screened 636a.

*Schistosoma bovis* cercaria, mode of penetration 580i.  
 — — cercariae, "spreading factor" 591h.  
 — — — morphology 560d.  
 — — *haematobium* in laboratory animals 641h.  
 — — — man in Cape Verde Islands 560h.  
 — — — — Senegal 600a.  
 — — *japonicum* in cattle in Japan 645n.  
 — — *mansi* in animals, lesions without eggs 702g.  
 — — — *Australorbis glabratus*, cercarial elimination 702f.  
 — — — — —, effect on reproduction 702c.  
 — — — — —, — survival 702e.  
 — — — — —, susceptibility 702d.  
 — — — *Didelphis* in Brazil 702a.  
 — — & disease in man in Belgian Congo 566b.  
 — — — — — Mozambique 566d.  
 — — — — — Southern Rhodesia 566c.  
 — — — intestinal obstruction in man 579a.  
 — — — in laboratory animals, intestinal haemorrhages 566i.  
 — — — man in Brazil, new foci 712ba.  
 — — — haematology 709b.  
 — — — *Planorbis* in Egypt, seasonal variation 641i.  
 — — — *Rattus*, pathology 702b.  
 — — — *Tropicorbis centimetralis*, susceptibility 702d.  
 — — *turkestanicum*, life-history 696a.  
*Schistosome dermatitis* in man in Canada 572a.  
 — intermediaries, biological control 604a.  
 — — —, effect of chemicals in water 604g.  
 — — in Near East 641f.  
*Schistosomes* in Africa 566a.  
*Schistosomiasis* & cancer in man 641c, 641d.  
 — — cerebral involvement in man 665a.  
 — — cor pulmonale in man 647a.  
 — — liver fibrosis in man 641g.

Schistosomiasis in man 669b, 710a, 731a.  
 — — —, diagnosis 711a.  
 — — — in Mozambique, general account 560a.  
 — — —, surgery 660a.  
 — haematuria & nephritis in man 599b.  
 — — — perforation of bladder in man 599a.  
 — japonica in man in Philippines 649c.  
 — mansoni in man 711b.  
 — — —, effect on albumin & globulins 633d.  
 — — —, — liver function 720a.  
 — — —, technique for diagnosing 633e.  
*Setaria* in cattle in Japan 597b.  
 — *digitata* in cattle in Japan 597a.  
 — *marshalli* in cattle in Japan 597a.  
*Skrjabinopolus skrabini* to *Skrjabinopolus acipenseris* 749b.  
 Snails, attacked by crustaceans 604a.  
 —, biological control 672b.  
*Sparganum* in man in Australia 662a.  
*Spirocera sanguinolenta* in dog, pathology 723a.  
*Stephanostomum baccatum* metacercariae in fish 643d.  
 — — — *Pseudopleuronectes*, biology 643e.  
*Stephanurus dentatus* in pig in Ceylon 607d.  
 — — —, general account 700a.  
 Strigeids in reptiles in Brazil 671a.  
*Strongyloides ransomi* in domestic animals, experimental 645g.  
 — *stercoralis* in man 646a.  
 — — —, auto-infection 576a.  
*Strongyloidiasis* in dog, caricide 658a.  
 — — man in France 601a.  
*Syphacia obvelata* in mouse 547b.  
  
*Taenia* in man, treatment 667ba, 676b.  
 — — —, *Vermella* 668d.  
 — spp. in man, atebrin 631a.  
 — *saginata* in man, atebrin 668a.  
 — — —, diagnosis 690b.  
 — — —, haematology 668c.  
 — — —, X-ray diagnosis 570a.  
*Taeniasis* in man, Azacrin 716a.  
 — — —, camoquin 566j.  
 — — —, treatment 592a.  
**Technique.** Administering anthelmintics 717j; administering phenothiazine to cattle 753a; collecting helminth ova 715a; collecting helminth ova from faeces 609b; collecting helminths from cattle 753c; collecting *Heterodera rostochiensis* cysts from soil 554a; culturing *Ascaridia galli* ova 696c; detecting helminth ova & larvae 667k; determining copper in water 702h; determining viability of eelworms 699c; diagnosing helminths in man & animals 667a; diagnosing liver-fluke in sheep & cattle 670a; diagnosing schistosomiasis mansoni 633e; diagnosing *Wuchereria bancrofti* 712k; hatching *Toxocara canis* ova 667g; making surveys of *Heterodera rostochiensis* 750; preparing helminth specimens 667l; studying hatching of *Heterodera schachtii* cysts 661a.  
*Ternidens* n.sp. in monkey 546c.  
*Tetrameres fassispsina* in *Perdix* & *Alectoris* in Turkey 737a.  
*Thysanosoma*, life-history 753 l.  
 — *actinoides*, life-history 753k.  
**Toxicity.** Hexachlorethane to goat 607c; phenothiazine to horse 605a; phenothiazine to man 551b.  
*Toxocara canis* ova, technique for hatching 667g.  
**Treatment.** *Ancylostoma duodenale* 627e; ascarids 605b; *Ascaris lumbricoides* & intestinal occlusion 717a; coenurosis 651c; *Dirofilaria* 645a, 645k; *Dirofilaria immitis* 581a, 684a, 740a; *Fasciola hepatica* in man 717h, 717i; helminths & diarrhoea 717b; helminths in man 668b; helminths in pigeon 586a; helminths in sheep 586b; hydatid 555a; nematodes in man 721a; *Parafilaria acutiuscula* 569c; *Taenia* 667ba, 676b; taeniasis 592a; trichuriasis 667be; *Trichuris* 666a.  
*Triaenophorus* spp. in fish in North America, distribution 643b.  
*Trichinella* in meat, control 756.  
 — — —, — by irradiation 693e.  
 — *spiralis* in cat in India 635b.  
 — — — cattle 617a.  
 — — — mouse, effect of ACTH & cortisone on immunity 557a.  
 — — — rat, immunity & transmission 563e.  
*Trichinellosis* in Arctic, epidemiology 730a, 747a.  
 —, control 589a.  
 —, general account 689a.  
 — in man, cortisone 606a.  
 — — & pig, symptoms 615a.  
 — — — in U.S.A. 693d.  
 — — rat, ocular symptoms 602a.  
*Trichonema elongatum* var. *kotlani* in Venezuela 673a.  
*Trichostrongylus axei* in *Alces* 753e.  
 — — & *Haemonchus contortus* in sheep, pathogenic interaction 753n.  
 — *orientalis* in man in Japan 632d, 632e.  
*Trichuriasis* in man, treatment 667be.  
*Trichuris* in man 667u.  
 — — —, longevity of infection 667t.  
 — — —, treatment 666a.  
 — *vulpis* in dog, whipcide 658b.  
  
*Uncinaria thapari* in *Ailurus* 681a.  
  
*Wehrdikmansia cervipedis* in *Cervus elaphus* in Poland, first record 547a.  
*Wuchereria bancrofti* & cerebro-meningeal involvement in man 660c.  
 — — in man in Brazil 712b, 712c, 712l, 712o, 712t, 712u, 712v, 712w, 712x.  
 — — — —, hetrazan 712m.  
 — — — — Dominican Republic 718a.  
 — — — — Tanganyika 620a.  
 — — — microfilaria, morphology 712q.  
 — — —, periodicity 712j, 712n.  
 — — — in placental blood 712e.  
 — — —, technique for diagnosing 712k.  
  
*Zygocotyle lunata*, lymph & excretory systems 563c.



**RESEARCH JOURNALS**  
Published by  
**NATIONAL RESEARCH COUNCIL OF CANADA**

Under the authority of the Chairman of the Committee of the Privy Council on Scientific and Industrial Research, the National Research Council issues annually seven journals devoted to the publication of the results of original scientific research. Most of the research on which the papers are based is carried out in Canada but contributions from workers in other countries are accepted also. Papers are published in English or French.

The seven journals, their frequency of publication, and the annual subscription rates are:

Canadian Journal of Biochemistry and Physiology	Monthly	\$3.00
Canadian Journal of Botany	Bi-monthly	\$4.00
Canadian Journal of Chemistry	Monthly	\$5.00
Canadian Journal of Microbiology	Bi-monthly	\$3.00
Canadian Journal of Physics	Monthly	\$4.00
Canadian Journal of Technology	Bi-monthly	\$3.00
Canadian Journal of Zoology	Bi-monthly	\$3.00

Manuscripts for consideration should be submitted to the Editor-in-Chief, National Research Council, Ottawa 2, Canada.

Requests for subscriptions should be mailed to the National Research Council, Ottawa 2, Canada, and remittances made payable to the Receiver-General of Canada, credit National Research Council.

---

**JOURNAL OF PARASITOLOGY**

*Official organ of the American Society of Parasitologists*

A medium for the publication of papers on animal parasites (Protozoa, Helminthes, Arthropoda). It also publishes the program and abstracts for the annual meeting of the American Society of Parasitologists in a Supplement. Regular numbers appear in February, April, June, August, October and December.

Subscription price, \$7.50 per year (Foreign \$8.00)

Leon Jacobs  
*Chairman, Editorial Committee*

**JOURNAL OF PARASITOLOGY**  
Laboratory of Tropical Diseases,  
National Institutes of Health,  
Bethesda 14, Maryland.

## NOTICE TO LIBRARIANS AND SUBSCRIBERS

The list of Principal Contents which formerly appeared at the beginning of each part of *Helminthological Abstracts* has been suspended.

From Volume 21 each volume of *Helminthological Abstracts* is issued in six parts with author and subject indexes. The later parts containing titles and abstracts of papers published in relatively inaccessible journals will not normally appear until after the earlier parts of the next volumes have been published: the final part will, in addition, contain author, subject and journal indexes for the whole volume. *This overlap is intentional and is inherent in the scheme to bring the literature of each year into a single volume when bound.* There were published in 1955 Vols. 21 (6), 22 (5), 23 (2, 3, 4), 24 (1) and in 1956 Vols. 22 (6), 24 (2, 3, 4) and 25 (1). According to present schedule there will be issued in 1957 Vols. 23 (5, 6), 24 (5), 25 (2/3, 4) and 26 (1, 2, 3).

The price of each volume of *Helminthological Abstracts* has been raised to £2 15s. (U.S.A. and Canada \$7.70) post free.

Correspondence regarding subscriptions and orders should be addressed to: Commonwealth Agricultural Bureaux, Central Sales Branch, Farnham Royal, Bucks, England.

Correspondence on scientific matters should be addressed to:

The Director, Commonwealth Bureau of Helminthology,  
The White House, 103 St. Peter's Street,  
St. Albans, Herts, England.

---

## THE NEMATODE PARASITES OF PLANTS CATALOGUED UNDER THEIR HOSTS

NEW (1956) EDITION

by

J. Basil Goodey, Ph.D. and Mary T. Franklin, Ph.D.

Goodey's catalogue of plant-parasitic nematodes published in 1940 is out of print. The text has now been rearranged and revised to include all known records up to the end of 1954. The recent advances in more precise identification are reflected in many changes in nomenclature.

Price 27/6 Post Free (\$3.85)

Orders should be sent to Commonwealth Agricultural Bureaux, Central Sales Branch, Farnham Royal, Bucks, England or through any bookseller.